Constituent Order in German Multiple Questions: Normal Order and (Apparent) Anti-Superiority Effects

Gisbert Fanselow, Jana Häussler, Thomas Weskott[1]

1. Introduction

In many languages of the world, in particular those with a clause-final positioning of the verb, the order of the constituents of a clause is fairly free. Nevertheless, clauses have an "unmarked" or "normal" arrangement of their constituents in most of these free constituent order languages – polysynthetic languages such as Mohawk are a notable exception (Baker, 1996).

The present paper is concerned with the factors that determine whether a given constituent order is unmarked or not. In particular, we report a series of judgment experiments concerned with constituent order preferences in German multiple questions. Their results show that multiple questions are a further, hitherto unknown, argument for the claim that normal order is not just determined by (semantic) role but also by cast: normal word order for wh-phrases differs from normal word order in simple declaratives. We will offer an attempt of an explanation for this difference in terms of a hierarchy of Case assigning heads in the final section of the paper.

The paper is organized as follows. We first give a short overview of ordering preferences in German declarative sentences, identifying the class of constructions that we will focus on here, *viz*. constructions with an unmarked object > subject order in declarative clauses. Section 3 briefly summarizes previous findings concerning constituent order in multiple questions. In section 4, we present five experiments examining ordering preferences in multiple questions. The implications of the experimental findings will be discussed in section 5.

2. Linearization preferences in German declarative sentences

German is a language with an underlying clause-final placement of the verb. Main clauses are subject to a "finite second" constraint, which forces

the movement of the inflected main verb or auxiliary to second position in the clause, i.e., to some head in the CP layer of the sentential projection. Like most other languages with an underlying object-verb serialization, German shows a relatively high degree of freedom of constituent order. The canonical ordering is subject-before-object (SO), but the reverse, object-before-subject (OS) is also possible. However, OS is, at least in standard agentive transitive clauses, less preferred: OS sentences are rare (Hoberg, 1981; Kempen and Harbusch, 2005; Bader and Häussler, 2010), they receive lower acceptability ratings (at least when presented in isolation) (e.g. Pechmann, Uszkoreit, Engelkamp, and Zerbst, 1994; Keller, 2000) and they cause processing difficulties even when ambiguity is not involved (Krems, 1984; Fanselow, Kliegl and Schlesewsky, 1999; Fiebach, Schlesewsky and Friederici, 2002; Felser, Münte and Clahsen, 2003).[2]

The seminal work of Lenerz (1977) and the research building on its insights identified various factors that favor the choice of marked OS order in agentive clauses, such as definiteness, pronominality, animacy, information structure (e.g. Lenerz, 1977; Uszkoreit, 1987; Müller, 1999).

Outside the realm of agentive constructions, OS can be an unmarked or even preferred word order. Passivized ditransitive verbs are a major source for this type of OS structure as already noted in Lenerz (1977). In addition, several classes of active non-agentive verbs license OS as the unmarked order, cf. the classification in (1) adapted from Eisenberg, 2004: 80.

(1) a. Object (accusative or dative) = Experiencer
(i) accusative: *anekeln* (`disgust‘), *begeistern* (`inspire‘), …
(ii) dative: *auffallen* (`strike‘), *gefallen* (`please‘), ...
b. Object (dative) = Cause: *gelingen* (`succeed‘), *passieren* (`happen‘)
c. Object (dative) = Possessor: *gehören* (`belong to‘), *zustehen* (`be entitled to‘), …

Experiencer-object verbs and the other two groups do not only have peculiar linearization preferences. In addition, they also exhibit specific restrictions on passivization, nominalization etc. (cf. Belletti and Rizzi, 1988; Grimshaw, 1990; Pesetsky, 1995; Bayer, 2004; Landau, 2010).

Corpus data match the claims made in theoretical work. The majority of sentences exhibit SO order; OS sentences are very rare. Closer inspection reveals an impact of case: accusative objects predominate in SO sentences, but dative objects predominate in OS sentences (cf. Hoberg, 1981; Kempen and Harbusch, 2005). Bader and Häussler (2010) report differences

between constituent order in the so-called middle field and constituent order involving the prefield.[3] For the former, their data confirm the flip of the case bias. When one of the arguments occupies the prefield, accusative predominates both in SO sentences and OS sentences. However, the proportion of dative is still higher in OS sentences compared to SO sentences. Verbs in OS sentences are mainly unaccusative verbs, psychological predicates, and passivized ditransitive verbs, that is, the classes of verbs that are identified as OS-verbs in the literature.

3. Some general remarks on multiple questions

Just as in English, exactly one *wh*-phrase is fronted to the left periphery of the clause (preceding the finite verb or auxiliary) in German *wh*-questions. In multiple questions, there is more than one *wh*-phrase that could be moved to the left, but the selection of the *wh*-phrase that actually appears in the left periphery is not random in English and German. In an English construction such as (2a-b), the fronting of the structurally higher (`superior') *wh*-phrase is mandatory, while the lower *wh*-phrase must be left *in situ*. The reverse constellation is not acceptable, as shown in (2b).

(2) a. Who recommended what?
b. *What did who recommend?
c. *Wer hat wen empfohlen*
who.nom has who.acc recommended?
`Who recommended who?'
d. *Wen hat wer empfohlen*?

This superiority effect –a lower *wh*-phrase cannot be moved across a higher *wh*-phrase– is very robust in English, and has been investigated for more than four decades. However, there is still neither a consensus as to whether the effect is due to a principle of syntax or not (cf., e.g., Chomsky, 2008 and Hofmeister and Sag, 2010 for negative answers to this question), nor what such a principle of syntax would look like (cf. Chomsky, 1973, 1981; Pesetsky, 2000; Haider, 1997 for various alternatives), but, fortunately, we do not have to side with a particular proposal at the present moment.

German also shows a superiority effect in its multiple questions, at least when one confines one's attention to questions with two animate *wh*-phrases such as (2c,d) (Featherston, 2005; Fanselow et al., 2011; Häussler et al., to appear). The effect is, however, much smaller in size than in

English, i.e., the decrease in acceptability found with crossing *wh*-phrases is larger in English than in German.

If we want to avoid the assumption that different syntactic constraints are at work in English and German, or that gammatical principles may intrinsically have different strengthes in English or German, the following analysis seems plausible. There is a strong grammatical constraint against crossing A-bar-movement of an operator phrase penalizing it by a large drop in acceptability. This constraint is responsible for the contrast between (2a,b). The constraint is at work in German, too, and blocks the fronting of a *wh*-object across a *wh*-subject in German SO sentences. I.e., (2d) cannot be derived from an underlying structure *hat wer (S) wen (O) empfohlen*.

However, German allows OS structures as a marked option. If (2d) is derived from an underlying *hat wen (O) wer (S) empfohlen* (as suggested by Haider, 1993, cf. also Fanselow, 2001), no crossing A-bar movement is necessary for the derivation of (2d), so the strong superiority constraint is not violated. However, the structure underlying (2d) is a marked one, and this markedness may be blamed for the small yet significant drop in acceptability in German object-initial multiple questions.

This line of reasoning makes a clear prediction: Constructions involving verbs with an unmarked OS order should show the same ordering preference in multiple questions: the object-initial multiple question involves no crossing movement violating superiority when derived from an underlying OS serialization; nor does it incur any penalty for using an OS clause, since OS is unmarked for these verbs. We tested this hypothesis with the following experiments.

4. Multiple questions with predicates with unmarked OS order

We constructed the material for our experiments with OS verbs selecting dative rather than accusative objects, because many such accusative governing verbs also possess an additional agentive interpretation that might interfere with the participants' judgments in an unpredictable way.

Differences in animacy between the *wh*-phrases might blur the already small ordering effects in structures such as (2c,d) (cf., e.g., Fanselow et al., 2011). Therefore, the *wh*-phrases were all animate in our experiments. This has a further advantage: a possible confounding effect of a further serialization strategy of German can be avoided. German prefers the placement of animate noun phrases before inanimate ones. For a sentence

such as *dass dem Kind das Buch gefällt* 'that the.dat child the.nom book pleases', it is therefore difficult to tell apart the serialization effects of the animacy preference from the serialization effects triggered by verb class. By confining ourselves to pairs of animate *wh*-phrases, this difficulty can be avoided.

In three separate experiments, we examined ordering preferences in multiple questions for three types of verbs: dative selecting agentive verbs, experiencer-object verbs selecting *haben* (`have') as perfect auxiliary and experiencer-object verbs selecting *sein* (`be'). A fourth experiment examined passive ditransitive sentences, and a fifth experiment investigated their active counterparts.

4.1. Multiple questions with agentive verbs

Experiment 1 serves as a baseline: we need to establish that word order in multiple questions is independent of considerations of case alone. Agentive verbs with a dative object preferentially occur with SO order, just like agentive verbs with an accusative object. Discovering the small superiority related effect of (2d) in corresponding multiple questions with dative objects too would not conflict with the basic constituent order preference.

Experiment 1 employed eight sentence pairs as in (3), containing the following verbs: *widersprechen* ('to gainsay so.'), *zujubeln* ('to cheer for so.'), *beistehen* (`to back so. up'), *zuprosten* (`to raise one's glass to so.'), *winken* (`to wave to so.'), *zuzwinkern* (`to wink at so.'), *zürnen* (`to be angry at so.')[4], *absagen* ('to call-off'). All sentences are root questions containing two *wh*-phrases—one asking for the subject and the other one asking for the dative object. The two *wh*-phrases are both unambiguous with respect to case, and they both refer to animate entities. The members of each sentence pair differ in the order of the two *wh*-phrases. In one version the *wh*-subject precedes *wh*-object (SO), in the other version the *wh*-object precedes the *wh*-subject (OS).

(3) a. *Wer hat nach dem Vortrag wem widersprochen?*
Who.nom has after the talk who.dat gainsaid
`Who gainsaid who after the talk?'

b. *Wem hat nach dem Vortrag wer widersprochen?*
Who.dat has after the talk who.nom gainsaid
`Who did who gainsay after the talk?'

The sentences were distributed across two lists according to a Latin square design. The items within each list were randomized and interspersed in a larger questionnaire containing 100 sentences in total.

Sixteen students from the University of Potsdam, all monolingual native speakers of German, judged the acceptability of the sentences on a 7-point scale ranging from 1 (absolutely unacceptable) to 7 (perfectly acceptable). Table 1 gives the mean ratings.

Table 1. Mean ratings in Experiment 1 (agentive verbs)

SO (*Wer ... wem*)	OS (*Wem ... wer*)
5.59	4.48

Multiple questions in which the subject-*wh* is fronted received higher ratings than their counterparts with opposite ordering. Analyses of variance confirm this impression; they reveal a significant main effect of Order ($F_1(1, 15) = 12.1$, $p < .01$; $F_2(1, 7) = 9.5$, $p < .05$). Hence, agentive verbs with a dative *wh*-object exhibit the same SO-preference that has been attested for multiple question with an accusative *wh*-objects (for the same pattern in ditransitive constructions, see Featherston, 2005). As such, the difference between accusative and dative Case plays no role in the determination of word order in multiple questions.

4.2. Multiple questions with experiencer-object verbs

We now turn to constructions with an unmarked OS order in declarative sentences. Experiments 2 and 3 examine multiple questions with an experiencer verb as in (4) and (5).

(4) a. *Wer hat auf der Tagung wem imponiert?*
Who.nom has at the conference who.dat impressed
`Who impressed who at the conference?'

b. *Wem hat auf der Tagung wer imponiert?*
Who.dat has at the conference who.nom impressed

(5) a. *Wer ist auf der Tagung wem aufgefallen?*
Who.nom is at the conference who.dat struck
`Who struck whom at the conference?'

b. *Wem ist auf der Tagung wer aufgefallen?*
Who.dat is at the conference who.nom struck

All sentences are root questions containing a *wh*-subject and a dative *wh*-object. The factor Order varied the order of the two *wh*-phrases: either the *wh*-subject was fronted or the *wh*-object was fronted. Different verb classes based on perfect auxiliary selection were tested in Experiments 2 and 3, because of claims in the literature that differences in auxiliary selection come with differences in underlying syntactic representations in German (cf. Grewendorf 1989 and subsequent work). Experiment 2 tested four (possibly unergative) experiencer-object verbs selecting *haben* ('have') as perfect auxiliary: *imponieren* (`to impress so.'), *missfallen* (`to displease so.'), *gefallen* (`to please so.), *leidtun* (`to trigger compassion'); each verb occurred in two sentences. Experiment 3 employed four unaccusative verbs (with *sein* 'be' as their perfect auxiliary), each in two sentences: *auffallen* (`to catch so.'s attention'), *einfallen* (`to cross so.'s mind.), *entfallen* (`to slip so.'s mind') and *verfallen* (`to be under so.'s spell').

What we have said so far about multiple questions in German predicts that there is either no difference in acceptability between the a. and b. examples, or that the object initial examples are even better than their subject initial counterparts because of an OS preference characteristic of these verbs.

For each experiment, we constructed eight sentence pairs, distributed them across two lists each, mixed them with a variety of filler items and randomized the resulting lists. The resulting questionnaires contained 100 items each and were filled in by 16 participants each (all monolingual native speakers of German). The participants rated the items's acceptability on a 7-point scale as in Experiment 1. Table 2 gives the mean ratings for each verb type broken down by Order.

Table 2. Mean ratings in Experiments 2 and 3 (experiencer object verbs)

	Experiment 2 (*haben* Auxiliary)	Experiment 3 (*sein* Auxiliary)
SO (*Wer ... wem*)	4.67	3.81
OS (*Wem ... wer*)	3.47	2.77

We see a preference for the *wh*-subject to precede the *wh*-object. The factor Order reaches significance both in Experiment 2 ($F_1(1,15) = 14.0$, $p < .01$; $F_2(1,7) = 21.0$, $p < .01$) and in Experiment 3 ($F_1(1,15) = 10.7$, $p < .01$; $F_2(1,7) = 5.7$, $p < .05$). Note that the observed ordering preference contrasts with the preference in declarative sentences, and therefore disconfirms our

expectations. Wh-phrases appear to prefer crossing movement in sentences with OS experiencer predicates.

In order to make sure that the OS linearization preference in declarative clauses indeed holds for the predicates we used in Experiments 2 and 3, we conducted two control experiments. The items for these experiments were constructed from the ones in Experiment 2 and 3 by replacing the *wh*-phrases with definite NPs as shown in (6) and (7) below.

(6) a. *Der Doktorand hat auf der Tagung dem Professor*
the.nom phd-student has at the conference the.dat professor
imponiert
impressed
`The PhD student impressed the professor at the conference.'

b. *Dem Professor hat auf der Tagung der Doktorand*
the.dat professor has at the conference the.nom phd-student
imponiert.
impressed

(7) a. *Der Doktorand war auf der Tagung dem*
the.nom phd-student was at the conference the.dat
Professor aufgefallen.
professor struck
`The PhD student struck the professor at the conference.'

b. *Dem Professor war auf der Tagung der*
the.dat professor was at the conference the.nom
Doktorand aufgefallen.
phd-student struck

The two control experiments were part of larger questionnaires. The questionnaire containing the control experiment for Experiment 2 contained 92 sentences in total and was assessed by 48 participants; the other questionnaire study had 78 items in total and 40 participants. Ratings were obtained on a 7-point scale as in Experiments 1-3. The results are shown in Table 3.

Table 3. Mean ratings in the two control experiments (declarative sentences)

	Control for Experiment 2 (*haben* Auxiliary)	Control for Experiment 3 (*sein* Auxiliary)
SO	5.72	5.09
OS	5.69	5.64

The two control experiments confirm that experiencer-object verbs exhibit no SO-preference. The verbs selecting *haben* ('have') as their perfect tense auxiliary used in Experiment 2 show no ordering preference at all; the verbs selecting *sein* ('be') of Experiment 3 show an inverted ordering preference: sentences with OS order received higher ratings than SO sentences; the main effect of Order is significant in this control experiment ($F_1(1,39) = 12.4$, $p < .01$; $F_2(1,7) = 7.6$, $p < .05$). Note that the reversed preference is visible even though the OS sentences come with a potential disadvantage due the positioning of the adverbial above the subject.

Taken together, the findings in Experiments 2 and 3 and the two control experiments show that the preferred order in German multiple questions cannot be simply equated with with the unmarked word order of declaratives. Descriptively speaking, we have observed an anti-superiority effect that favors the reversal of normal word order in multiple questions.

4.3. Multiple questions with passive verbs

Passive sentences formed with a ditransitive verb often exhibit either no ordering preference or an OS preference. Experiment 4 examines questions in the passive voice containing a *wh*-subject and a dative *wh*-object. For comparison, the experiment also includes declarative counterparts that use definite NPs instead of *wh*-phrases.

(8) a. *Wer wurde wem gestern vorgestellt?*
Who.nom was who.dat yesterday introduced-to
`Who was introduce to whom yesterday?'

b. *Wem wurde gestern wer vorgestellt?*
Who.dat was yesterday who.nom introduced-to

c. *Der neue Mitbewohner wurde gestern*
the.nom new room-mate was yesterday
dem Vermieter vorgestellt
the.dat landlord introduced-to

d. *Dem Vermieter wurde gestern der neue*
the.dat landlord was yesterday the.nom new
Mitbewohner vorgestellt
room-mate introduced-to

We constructed 16 sentences as in (8), each in four versions according to the four conditions resulting from fully crossing the two factors Order (SO

vs. OS) and Sentence Type (multiple question vs. declarative sentences). The items were distributed across four lists, randomized and mixed with a variety of filler items. The questionnaire contained 123 sentences in total. 36 students from the University of Potsdam (all monolingual native speakers of German) rated the acceptability of the sentences on a 7-point scale. The mean ratings are given in Table 4.

Table 4. Mean ratings in Experiment 4 broken down by Sentence Type and Order.

	Declarative sentences	Multiple questions
SO	6.02	5.85
OS	5.91	4.91

As expected, declarative sentences exhibit no ordering preference. Multiple questions, in contrast, again received a penalty when the *wh*-object is fronted. This produced a significant interaction of the two factors Order and Sentence Type ($F_1(1,35) = 11.2$, $p < .01$; $F_2(1,15) = 15.5$, $p < .01$). The factor Order reached also significance as a main factor ($F_1(1,35) = 18.9$, $p < .001$; $F_2(1,15) = 14.0$, $p < .01$) as did the factor Sentence Type ($F_1(1,35) = 14.7$, $p < .001$; $F_2(1,15) = 16.2$, $p < .01$).

The passive study thus is in line with the results of the experiments presented in section 4.2. Multiple questions come with a preference for SO order although the corresponding declaratives are equally acceptable with SO and OS order.

4.4. The interaction of objects for active ditransitive constructions

The identification of an unmarked order among the two objects is a difficult matter for German ditransitive verbs. As shown by Meinunger (1996), there are three classes of ditransitive verbs, which respectively show a dative > accusative preference, an accusative > dative preference, and no clear word order preference at all. Most ditransitive verbs belong to the third category, including the verbs used in Experiment 4.

With our final Experiment 5, we wanted to investigate whether the difference between the ordering preferences of declarative and interrogative sentences can also be observed for the objects of ditransitive verbs. Experiment 5 examines short questions in the active voice containing a dative and an accusative *wh*-object. Similar to Experiment 4, the

experiment also includes declarative counterparts that use definite NPs instead of *wh*-phrases.

(9) a. *Wen hat Peter gestern wem vorgestellt*?
who.acc has P. yesterday who.dat introduced-to
`Who introduced Peter to whom yesterday?‘

b. *Wem hat Peter gestern wen vorgestellt*?
Who.dat has P. yesterday who.acc introduced-to

c. *Den neuen Mitbewohner hat Peter gestern*
the.acc new flat-mate has P. yesterday
dem Vermieter vorgestellt.
the.dat landlord introduced-to
`Peter introduced the new flat-mate to the landlord yesterday.‘

d. *Dem Vermieter hat Peter gestern den neuen*
the.dat landlord has P. yesterday the.acc new
Mitbewohner vorgestellt.
flat-mate introduced-to

We constructed 16 sentences as in (9), each in four versions according to the four conditions resulting from fully crossing the two factors Order (Acc > Dat vs Dat > Acc) and Sentence Type (multiple question vs. declarative sentences). The items were distributed across four lists, randomized and mixed with a variety of filler items. The questionnaire contained 68 sentences in total. 40 students from the University of Potsdam (all monolingual native speakers of German) rated the acceptability of the sentences on a 7-point scale. The mean ratings are given in Table 5.

Table 5. Mean ratings in Experiment 5 broken down by Sentence Type and Order.

	Declarative sentences	Multiple questions
Acc>Dat	5.22	5.56
Dat>Acc	5.39	4.67

As expected, declarative sentences showed no strong ordering preference. Multiple questions, in contrast, received a penalty when the dative *wh*-object was fronted. This produced a significant interaction of the two factors Order and Sentence Type ($F_1(1,39) = 16.7$, $p < .001$; $F_2(1,15) = 9.7$, $p < .01$). The factor Order reached significance as a main effect only in the analysis by participants but failed significance in the item analysis ($F_1(1,39) = 10.2$, $p < .01$; $F_2(1,15) = 2.4$, $p .14$). The factor Sentence Type failed

significance in both analyses ($F_1(1,39) = 2.01$, $p = .16$; $F_2(1,15) = 2.7$, $p = .12$).

The interaction of the objects in ditransitive sentences contrasts with findings from Featherston (2005)—though, numerically there was the same trend—but falls in line with what we have observed in the previous experiments: there are different constituent order preferences for declaratives and multiple questions.

5. Discussion

Previous research on multiple questions in German (Featherston, 2005; Fanselow et al. 2011; Häussler et al., to appear) had focused on standard agentive constructions, for which a small but significant penalty for moving a *wh*-object across a *wh*-subject could be found. The ordering preference for declaratives and interrogatives is identical for these constructions, which renders possible an analysis that derives constituent order in multiple questions from an underlying structure with the normal constituent order of declaratives, employing a ban against crossing movement (=a superiority effect). In this sense, what is going on in German multiple question is roughly what we observe in English, albeit in a milder form.

The results of the experiments presented here cast some doubt on this view. They show that there is a robust preference for *wh*-subjects to precede *wh*-objects in all experiments that holds across various construction types and that is quite independent of the normal word order facts in the corresponding declaratives. The idea that one could derive the preferred constituent order of a multiple question from the preferred constituent order of a declarative with the help of some ban on crossing movement (= superiority condition) simply won't do the job in German. Likewise, the acc > dat preference found for objects in multiple questions cannot be made to follow from normal declarative word order with the help of ban on non-crossing movement.

When we compare the data for declaratives and interrogatives, the following generalization suggests itself: Word order preferences in German declarative sentences are grounded in a hierarchy of thematic roles, while word order preferences in multiple questions are grounded in a hierarchy of Case.

The Case hierarchy is simple: nom > acc > dat. It is a version of the Syntactic Function Hierarchy of Keenan and Comrie (1977).[5] Our

experiments show that a wh-phrase low on the Case hierarchy should not cross a *wh*-phrase higher on the hierarchy when it moves to the left periphey of the clause.

The thematic hierarchy is a bit more complex. The agent always occupies the highest position in the verbal projection. Experiencers are higher than themes and patients. The relative hierarchical position of goals and themes is variable. In a German declarative clause, the noun phrase with a higher thematic role preferentially precedes phrases with a lower role, quite irrespective of Case. Thus, experiencers precede themes in normal order independently of whether they bear nominative, dative, or accusative Case. The two hierarchies completely coincide only for standard agentive transitive constructions.

We believe that our findings on word order preferences can be made sense of along these lines with the help of a few reasonable assumptions.

Let us begin with declaratives. Arguments and adjuncts are merged in the verbal projection domain, above which we postulate a set of functional projections from the TP domain. Some of these functional heads are also responsible for the assignment/checking of Case. Tense assigns nominative Case, and we work with two further heads that govern accusative and dative case, respectively, and which, for reason of simplicity, we will simply label as F-Acc and F-Dat, so that we do not have to commit ourselves here as to whether these heads can be identified with categories such as ASP, etc. This yields a sentence structure such as (10).

(10) [a Tns [b F-Acc [c F-Dat [$_{vP}$ α v [$_{VP}$ β [V γ]]]]]]

Arguments have to be merged/inserted within vP, in positions determined by their thematic role. Thus, the specifier of vP is the position of agents, and the specifier of VP, the position for experiencers, while themes are inserted into the complement position of the verb. Arguments are thus merged in the hierarchy/order agent > experiencer > theme, which corresponds to their normal order in declaratives. This follows if (unlike what holds for English) arguments normally do not have to leave their merge position in German. In particular, German Case assignment does not presuppose that noun phrases move overtly to the specifier position of the Case assigning heads, so that they can stay in vP (as already argued for by den Besten (1985). Fanselow (2001) proposes that the movement to the specifiers of the Case assigning heads is a matter of the covert component of grammar in German, so that it is invisible at surface structure.

(Marked) alternative constituent order in declaratives can be derived in various ways, e.g., by A-scrambling. A-Scrambling is licensed by semantic-pragmatic features, and implies a certain degree of markedness in grammatical status. We can make A-Scrambling responsible for the lower acceptability of marked word order.

Let us now turn to multiple questions. We propose that their different behavior with respect to normal order can be attributed to the syntactic properties of *wh*-phrases. *Wh*-phrases move to an operator position (Spec,CP) in the CP domain of the clause in overt syntax. Since Spec,CP is the highest position in the clause, and given that there is no syntactic lowering, the *wh*-phrase cannot move covertly from the Spec,CP position to the specifier position of the Case assigning head. Rather, the *wh*-phrase has to already pass through the specifier of the Case assigning head in overt syntax on its way up to Spec,CP. Consider now the following sluicing data:

(11) Ich habe bemerkt, dass auf der Feier
I have noted that at the party
a. jemand jemandem besonders gefallen hat,
someone.nom someone.dat particularly pleased had
und ich weiß auch wer wem
and I know also who.nom who.dat
b. *jemand jemandem besonders gefallen hat,
someone.nom someone.dat particularly pleased had
und ich weiß auch wem wer
and I know also who.dat who.nom
c. jemandem jemand besonders gefallen hat,
someone.dat someone.nom particularly pleased had
und ich weiß auch wer wem
and I know also who.nom who.dat
d. *jemandem jemand besonders gefallen hat,
someone.dat someone.nom particularly pleased had
und ich weiß auch wem wer
and I know also who.dat who.nom

The antecedent clause of the sluicing construction can appear with both SO and OS order without any markedness effect, because *gefallen* ‘please’ is not an agentive predicate. The sluiced clause, however, must have SO order, inspite of the fact that *gefallen* tolerates OS order, and even when the antecedent clause itself has the object precede the verb (11c,d). The sluicing construction thus resembles multiple questions in that normal order

is not derivable from the word order preferences of the corresponding declarative.

The pattern in (11) follows from our assumption that *wh*-phrases must move through the specifier positions of the corresponding Case phrases in overt syntax. Sluicing constructions are derived by A-bar-moving all *wh*-phrases to the left periphery and subsequently deleting the other material in the sluiced clause as illustrated in (12).

(12) John likes someone and I know [John likes who] →
John likes someone and I know [who [John likes ~~who]]~~ →
John likes someone and I know [who ~~[John likes who]]~~

Since there is no lowering, the *wh*-phrases in (11) must move to the respective Case assigning heads before they undergo A-bar-movement to Spec,CP. Thus, the experiencer dative moves to the specifier of F-Dat before it undergoes operator A-bar-movement, and the theme nominative goes to Spec,Tense. They reverse their relative order in this movement step. If the superiority condition is formulated in such a way that it forces that relative order is kept constant when more than one phrase moves (as in Müller 2001), and if the superiority condition affects A-bar-movement, then the *wh*-phrases are predicted to appear at the left periphery in the order they have in the specifier positions of the Case assigning heads, viz. the positions before A-bar-movement. The normal order facts of sluicing are thus accounted for.

In contrast to sluicing constructions, only one *wh*-phrase moves in the overt syntax in multiple questions. This *wh*-phrase must pass through the specifier of its Case assigning head. We need to derive that the preferred order is determined by the Case hierarchy. This follows if the *wh*-phrase left *in situ* also moves to Spec,CP in the covert component, passing through the specifier of its Case assigner. Thereby, the constellation characteristic of sluicing constructions arises, and we derive the preferred word order if the superiority condition demands that the hierarchies between the highest pre-oprator movement positions must be respected by A-bar movement. Deviations from the preferred word order can again be explained in terms of scrambling, now in the domain of Case assigning heads.

We have suggested that the differences between declaratives and interrogatives with respect to normal order follow from the fact that *wh*-phrases are forced to move to operator positions through Case assigning

heads which have a hierarchy different from the one characterizing thematic roles.

6. Notes

[1] The research reported here was supported by grant FA 255/6-2 of the Deutsche Forschungsgemeinschaft to Fanselow. We want to thank Andreas Schmidt and Ümmühan Yildiri for their hard work during data collection.

[2] For overviews of evidence for a strong SO-preference in locally ambigous sentences, see Bader and Bayer 2006; Bornkessel and Schlesewsky 2006.

[3] The terms middlefield and prefield are taken from the topological model of German syntax. Since Drach (1937), the topological model provides a means to describe important aspects of the German syntax in a theory-neutral way (cf. Askedal, 1986; Engel, 1972; Höhle, 1986). The prefield corresponds to SpecCP in generative work, the middlefield spans the part to the right of C up to the verb cluster.

	prefield SpecCP	left bracket C^0	middle field	right bracket Verb cluster
(i)	*Peter*	*hat*	*den Vater*	*beobachtet*
	P.	has	the father	watched
(ii)	*Heute*	*hat*	*Peter den Vater*	*beobachtet*
	Today	has	P. the father	watched
(iii)		*dass*	*Peter den Vater*	*beobachtet hat*
		that	P. the father	watched has

[4] This verb is actually no agentive verb but a psychological predicate with an experiencer argument. Note, however, that the experiencer is the subject. In any case, excluding the respective item from the analysis did not change the results.

[5] Keenan and Comrie proposed the hierarchy orginally under the label 'NP accessibility hierarchy' to account for patterns of relative clause formation. Later, the hierarchy was adapted for various phenomena including argument linearization (for an overview, see Croft, 2003).

7. References

Askedahl, J.O.
1986 Über ‘Stellungsfelder’ und 'Satztypen' im Deutschen. *Deutsche Sprache*, 14, 193-223.

Bader, M., and Bayer, J.
2006 *Case and linking in language comprehension: Evidence from German*. Heidelberg: Springer.

Baker, M.
1996 The polysynthesis parameter. New York: Oxford UP.

Bayer, J.
2004 Non-nominative subjects in comparison. In: P. Bhaskararao and K. V. Subbarao (Eds.), *Non-nominative subjects.* Vol. 1, 49-76. Amsterdam: Benjamins.

Belletti, A., and L. Rizzi
1988 Psych-verbs and theta-theory. *Natural Language and Linguistic Theory*, 6: 291-352.

Den Besten, H.
1985 The Ergative Hypothesis and Free Word Order in Dutch and German. In J. Toman (ed.) *Studies in German Grammar*. 23 – 64 Dordrecht: Foris.

Bornkessel, I., and Schlesewsky, M.
2006 The Extended Argument Dependency Model: A neurocognitive approach to sentence comprehension across languages. *Psychological Review*, 113, 787-821.

Chomsky, N.
1973 Conditions on transformations. In: S. R. Anderson and P. Kiparsky (Eds.), *A Festschrift for Morris Halle*, 232-286. New York: Holt Rinehart and Winston.

Chomsky, N.
1981 Lectures on government and binding. Dordrecht: Foris.

Chomsky, N.
2008 On phases. In R. Freidin, C. Otero, and M. L. Zubizarreta (Eds.) *Foundational issues in liguistic theory. Essays in honor of Jean-Roger Vergnaud*. 133-166. Cambridge, Mass.: MIT Press.

Croft, W.
2003 *Typology and universals*, 2nd ed. Cambridge: Cambridge University Press.

Drach, E.
1937 *Grundgedanken der deutschen Satzlehre*, 4th edition. Frankfurt a. M.: Diesterweg.

Eisenberg, P.
2004 *Grundriß der deutschen Grammatik. Band 2: Der Satz*, 2nd edition. Stuttgart: Metzler.

Engel, U.
1972 Regeln zur ‘‘Satzgliedfolge’’: Zur Stellung der Satzglieder im einfachen Verbalsatz. *Linguistische Studien*,1: 17–75.

Fanselow, G.
2001 Features, Theta-roles, and Free Constituent Order. *Linguistic Inquiry*, 32: 405-437.

Fanselow, G., M. Schlesewsky, R. Vogel and T. Weskott
2011 Animacy effects on crossing wh-movement in German. *Linguistics*, 49: 657–683.

Fanselow, G., R. Kliegl, and M. Schlesewsky
1999 Processing Difficulty and Principles of Grammar. In: S. Kemper and R. Kliegl (eds), *Constraints on Language: Aging, Grammar and Memory*. 171-202. Dordrecht: Kluwer.

Featherston, S.
2005 Universals and grammaticality: *Wh*-constraints in German and English. *Linguistics*, 43: 667-711.

Felser, C., T. Münte, and H. Clahsen
2003 Storage and Integration in the Processing of Filler-Gap Dependencies: An ERP Study of Topicalization and Wh-movement in German. *Brain & Language*, 87: 345-354.

Fiebach, M. Schlesewsky, and A. D. Friederici
2002 Separating Syntactic Memory Costs and Syntactic Integration Costs during Parsing: The Processing of German Wh-questions. *Journal of Memory and Language*, 47: 250-272.

Grewendorf, G.
1989 *Ergativity in German*. Dordrecht: Foris.

Grimshaw, J.
1990 *Argument structure*. Cambridge, MA: MIT Press.

Haider, H.
1993 *Deutsche Syntax, generativ - Vorstudien zur Theorie einer projektiven Grammatik*. Tübingen: Narr.

Haider, H.
1997 Economy in syntax is projective economy. In C. Wilder, H.-M. Gärtner and M. Bierwisch (eds.), *The Role of Economy Principles in Linguistic Theory.* 205 - 226. Berlin: Akademie Verlag.

Häussler, J. , M. Grant, G. Fanselow and L. Frazier
to app. Superiority in English and German: Cross-language grammatical differences? To appear in *Syntax*.

Hoberg, U.
1981 *Die Wortstellung in der geschriebenen deutschen Gegenwarts-sprache*. München: Hueber.

Hofmeister, P. and Sag, I.A.
2010 Cognitive constraints and island effects. *Language*, 86: 366-415.

Höhle, T. N.
1986 Der Begriff 'Mittelfeld'. Anmerkungen über die Theorie der topologischen Felder. In A. Schöne (ed.), *Kontroversen, alte und neue. Akten des VII. internationalen Germanisten-Kongresses, Göttingen 1985*. Band 3, 329–340. Tübingen: Niemeyer.

Keenan, E. L. and B. Comrie
1977 Noun phrase accessibility and universal grammar. *Linguistic Inquiry*, 8: 63–99.

Keller, F.
2000 *Gradience in Grammar: Experimental and Computational Aspects of Degrees of Grammaticality*. PhD thesis, University of Edinburgh.

Kempen, G., and Harbusch, K.
2005 The relationship between grammaticality ratings and corpus frequencies: A case study into word-order variability in the midfield of German clauses. In M. Reis and S. Kepser (Eds.), *Linguistic evidence.* 329-349. Berlin: De Gruyter.

Krems, J.
1984 *Erwartungsgeleitete Sprachverarbeitung*. Frankfurt: Lang.

Landau, I.
2010 *The locative syntax of experiencers*. Cambridge, MA: MIT Press.

Lenerz, J.
1977 *Zur Abfolge nominaler Satzglieder im Deutschen*. Tübingen: Narr.

Meinunger, A.
1996 *Discourse dependent DP (de-) placement*. Groningen: University of Groningen, Center for Language and Cognition.

Müller, G.
1999 Optimality, markedness, and word order in German. *Linguistics*, 37, 777-818.

Müller, G.
2001 Order Preservation, Parallel Movement, and the Emergence of the Unmarked. In G. Legendre, J. Grimshaw, & S. Vikner (eds.) *Optimality-Theoretic Syntax*, 279-313. Cambridge, MA.: MIT Press.

Pechmann, T., H. Uszkoreit, J. Engelkamp, and D. Zerbst
1994 *Word Order in the German Middle Field: Linguistic Theory and Psycholinguistic Evidence*. Report No. 43, Computational Linguistics at the University of the Saarland.

Pesetsky, D.
1995 *Zero syntax: Experiencer and cascades*. Cambridge, MA: MIT Press.
Pesetsky, D.
2000 *Phrasal Movement and its Kin.* Cambridge, MA: MIT Press.
Uszkoreit, J.
1987 *Word Order and Constituent Structure in German*. Stanford: CSLI.