Where Question, Conditionals and Topics converge

Edgar Onea and Markus Steinbach*

University of Göttingen,
Courant Research Centre "Text Structures"
Nikolausberger Weg 23, 37073 Göttingen, Germany
edgar.onea@zentr.uni-goettingen.de
Markus.Steinbach@phil.uni-goettingen.de

Abstract. One puzzling fact about German is that what verb-one structures that surface as a yes-no questions can be interpreted as conditionals in a topic position. In this paper we provide an analysis for this phenomenon using the basic idea of inquisitive semantics that questions and assertions can be treated on a par as denoting sets of possibilities and some insights about the discourse function of different topic constructions in German. The key assumption is that in topic positions, questions can be interpreted as conditionals if and only if they contain a highlighted alternative possibility. We show that the analysis also correctly predicts the distribution of wh-questions and the distribution of so called irrelevance-conditionals containing *auch*('too').

Keywords: Topic, Conditionals, Inquisitive Semantics, Questions

1 Introduction

The standard difference between assertions and yes-no questions in German is that the former requires a verb-second (V2) construction, as in (1-a), whereas the latter exhibits a verb-first (V1) syntactic structure, as in (1-b). As opposed to yes-no questions, wh-questions, like assertions, exhibit a V2 structure but contain an initial wh-word, as in (1-c).

(1) a. Er kommt nach Hause.
he comes to home
'He comes home.'
b. Kommt er nach Hause?
comes he to home
'Does he come home?'
c. Wer kommt nach Hause?
who comes to home
'Who comes home?'

* This research has been supported by the German Initiative for Excellence funded by the DFG (German Science Foundation), which we gratefully acknowledge.

However, a V1-clause can also be interpreted as a conditional, whenever it appears in sentence initial position, embedded into a V2 clause, as in (2-a). Crucially, the same applies neither to plain V2 constructions nor to wh-questions, as shown in (2-b) and (2-c) respectively.

(2) a. Kommt er, gehe ich.
comes he go I
'If he comes, I go.'
b. *Er kommt, gehe ich.
comes he go I
intended: 'If he comes, I go.'
c. *Wer kommt, gehe ich.
comes he go I
intended: 'If he comes, I go.'

The main question this paper addresses, is accordingly: What is it about yes-no questions that makes a conditional interpretation possible in a topical position, as in (2-a). The answer to this question will be: yes-no questions can be analyzed as a set of alternatives containing one highlighted alternative. The rest of the ingredients of the analysis comes for free, if one makes the right assumptions about the function of two different sentence initial positions in German, namely *frame setting* and *aboutness* topics.

In the following section, we develop an analysis that correctly predicts the distributional facts in (1) vs. (2). For this we will use some existing theoretical tools, mainly the idea that yes-no questions can come with so-called highlighted alternatives, suggested in [Brasoveanu et al., 2011], and some general assumptions about the discourse function of two different topic constructions in German. In particular, we argue that yes-no questions can be aboutness but not frame-setting topics. In section three, we extend the set of data under consideration and show how the addition of the discourse particle *auch*('too') makes wh-questions in a higher topical position, which triggers a frame setting topic interpretation, acceptable. In addition, *auch* also successfully combines with yes-no questions, still preserving a conditional interpretation.

2 Questions as conditionals

In this section we present the basic analysis that predicts that, in German, yes-no questions can be interpreted as conditionals in a topical position. For this, we first briefly introduce the idea of inquisitive semantics including some relevant details. We then discuss the distribution of conditions in topic constructions in German. We show how a correct analysis of the discourse function of the aboutness topic together with the inquisitive analysis of V1-constructions correctly predict the distributional facts.

2.1 Inquisitiveness and highlighted alternatives

The first main ingredient of our theory is the recently developed theory of inquisitive semantics [Groenendijk and Roelofsen, 2009]. One of the interesting features of inquisitive semantics relevant for our approach is that a unified treatment of questions and propositions becomes available. Traditionally, questions have been assumed to denote sets of sets of worlds, while propositions denoted sets of worlds. By contrast, in inquisitive semantics the notion of a proposition is shifted to sets of special sets of worlds supporting the proposition and not included into any other sets of worlds, called possibilities. A proposition is then inquisitive, if it contains more than one possibility, and informative, if it rules out at least some possibilities. This is exemplified in (3)

(3) a. Peter smokes.
$\{\lambda w$.Peter smokes in $w\}$
Atomic assertion: informative but not inquisitive.
b. Peter smokes or Mary smokes
$\{\lambda w$.Peter smokes in $w, \lambda w$. Mary smokes in $w\}$
Disjunction: informative and inquisitive = hybrid.
c. Does Peter smoke?
$\{\lambda w$.Peter smokes in $w, \lambda w$. Peter does not smoke in $w\}$
Questions: non-informative, inquisitive.

In addition, we assume with [Brasoveanu et al., 2011] that the alternative possibilities may or may not be highlighted. Treat highlight as a technical notion. We signal 'highlighting' by underlining the corresponding alternative. We assume that in yes-no questions, the alternative explicitly mentioned is highlighted, hence, in positive yes-no questions the positive alternative is highlighted, and in negative ones, the negated one. We assume that we get this result in the process of composition, although we don't discuss the compositional details.

(4) a. Does Peter smoke?
$\{\underline{\lambda w$.Peter smokes in $w}, \lambda w$. Peter does not smoke in $w\}$
b. Doesn't Peter smoke?
$\{\lambda w$.Peter smokes in $w, \underline{\lambda w$. Peter does not smoke in $w}\}$

We define the operator $Highlight$ as taking a set as an argument and returning the unique highlighted element in a set. $Highlight$ and is undefined if either no such element exists or more than one element is highlighted:

(5) $Highlight(\llbracket$Does Peter smoke?$\rrbracket) = \lambda w$.Peter smokes in w.

Under the assumptions above, a V1 sentence in German denotes a set containing exactly two possibilities, as already suggested in [Lohnstein, 2000] and [Tuckenbrodt, 2006], however, we now take it that exactly one of them is highlighted.

2.2 The topic issue

We assume with [Frey, 2004b], and [Ebert et al., 2008] that in German there are at least two types of left dislocated topic positions. The so called hanging topic position is available for frame setting topics, as in (6), whereas the position known as German left dislocation or fronting, shown in (7), is reserved for aboutness topics.

(6) Der/den Minister, den liebt nur seine Frau.
the.NOM/the.ACC Minister, the.ACC loves only his wife
'The minister, only his wife loves him.'

(7) Den Minister (den) liebt nur seine Frau. the.ACC Minister, (the.ACC) loves only his wife
'The minister, only his wife loves him.'

It has been observed already in [Schlenker, 2004], and also in [Ebert et al., 2008] that in German if-clauses can appear in both topic positions. [Ebert et al., 2008] argue that in the hanging topic position the interpretation of conditionals is the one known under the label of biscuit conditionals and exemplified in (8). Such conditionals are special because the truth of the consequence does not seem to depend on the truth of the antecedent. As opposed to this, conditionals in the left dislocation position behave as expected: the truth of the consequence typically depends on the the truth of the antecedent, as in (9).[1]

(8) Wenn du Hunger hast, es gibt Kekse im Kühlschrank.
If you hunger have there exist biscuit in-the fridge
'If you are hungry, there are biscuits in the fridge.'

(9) Wenn du welche gekauft hast, gibt es Kekse im Kühlschrank.
If you some bought have there exist biscuit in-the fridge
'If you bought some, there are biscuits in the fridge.'

[Ebert et al., 2008] analyse conditionals as definite descriptions over possible worlds as argued in [Schlenker, 2004]. Building on a old analogy between conditionals and definite descriptions, Schlenker claims that p, in *if p then q* interpreted relative to a world w_0, denotes the single world w_1, most similar to w_0 such that $w_1 \in p$. The whole sentence is then analyzed as saying that $w_1 \in q$. It is easy to see, that this captures the truth conditions of conditionals, since this predicts that if a world w_2 exists in which p holds true but q does not,

[1] We use the position of the verb as a test. We assume that in German the verb always appears in the second position in assertions. Now, if the conditional counts in determining the second position of the verb, as in (9), we say that we have an instance of left dislocation or fronting, whereas if the conditional does not count, we have an instance of hanging topic, as in (8): practically, in a hanging topic construction, the verb appears in third place. Left dislocated or fronted constituents are syntactically more integrated into the matrix clause, however we do not discuss the exact syntactic details of the constructions in this paper. Note however, that intonational and further clues also help distinguishing, see [Ebert et al., 2008] and [Frey, 2004a] for details.

this world will be less similar to w_0, and, hence, the intuition is captured that if the antecedent holds true but the consequence does not, independent reasons will apply that do not hold in the world of evaluation. An example clarifies this: (10-a) is true if in the most similar world to the world of evaluation w_0 in which the hearer puts the glass on the table, the hearer is happy. This does not predict that (10-a-ii) also comes out as true, as the world in which the hearer puts the glass on the table such that it breaks into pieces might be less similar to the world of evaluation, hence, (10-a) is silent about the truth of the consequence in it. Note that ι in Schlenker's system is interpreted as a choice function involving a parameter in subscript, and not as a classical Russelian ι operator.

(10) a. If you put the glass on the table, I will be happy.
   (i) $happy(Speaker)(\iota w_{w_0}.put(Speaker, Glas, Table)(w))$
   (ii) If you put the glass on the table such that it breaks into pieces, I will not be happy.

[Ebert et al., 2008] argue that while conditionals interpreted as aboutness topics are ultimately interpreted as the world argument of the consequence, in the hanging topic position, i.e. frame setting topics such as (8), are interpreted as independent referential acts, such that the world argument of the consequence is not the world depicted by the antecedent, but rather the world of evaluation, roughly as in (11).

(11) a. $\exists biscuit(\iota w_{w_0}.Buy(Speaker, biscuit)(w))$
   b. $REF(\iota w_{w_0}.Hungry(Speaker)(w)) \wedge ASSERT(\exists biscuit(w_0))$

2.3 Our analysis

We follow the main line of attack pursued in [Ebert et al., 2008], however, we take it that there is not enough evidence for the treatment of conditionals as definite descriptions over worlds.

For one thing, we see conceptual problems with the analysis in [Schlenker, 2004] already noticed in [Lewis, 1973] that the selection of *the* most similar world is problematic. In addition, we do not see how such an analysis could extend to V1-conditionals. Instead, we assume the more traditional analysis of conditionals as restricting the quantification of overt or covert modals. In particular, this means that a conditional interpretation is only possible if at LF at least a covert modal is available in the antecedent.

We assume that a proposition, interpreted in an aboutness topic position, will simply end up in its standard function, with the difference that we get some contrastive marking in the sence of [Büring, 2003]. If one explicitly signals that he is speaking about something, implicitly alternatives must have been available in the discourse. Otherwise, the additional marking seems unreasonable. We do not assume, however, that any exhaustiveness inferences must be associated with this notion of contrast. As opposed to this, a frame setting topic ends up as a referential act independent of the actual logical structure of the assertion, much like in [Ebert et al., 2008].

We also follow [Ebert et al., 2008] in assuming that both aboutness topics and framesetting topics must be, in a sense, referential. We note, however, that propositional arguments generally can appear in these positions. A few examples are given in (12). The referentiality of topics cannot imply that propositions must denote one single world in this case, otherwise one would need to postulate that every embedded clause should refer to one single world, which seems weird.

(12) a. Weil Peter klug ist, (deshalbt) geht er nach Hause.
Because Peter clever is for-that goes he to home
'Peter goes home, because he is clever.'
b. Dass Peter klug ist, wissen wir.
That Peter clever is know we
'We know that Peter is clever'
c. Dass Peter klug ist, das wissen wir.
That Peter clever is that know we
'We know that Peter is clever'

More important seems, however the observation that inquisitive expressions such as disjunctions or non specific indefinites cannot appear in the topic position:

(13) a. #Peter oder Paul, die kommen spät.
Peter or Paul they come late
intended: 'Peter or Paul come late'
b. #Peter oder Paul, der kommt spät.
Peter or Paul he comes late
intended: 'Peter or Paul come late'
c. #Irgendein Mann, der kommt spät.
Some man he comes late
intended: 'Some man comes late'

We assume, therefore, instead of saying that propositions in topics denote one single world, that the topic operator, both for frame setting and for aboutness topic, can take propositional arguments only if the proposition, as a set of alternative possibilities, contains exactly one maximal possibility, i.e. the proposition is not inquisitive. This singleton requirement with respect to maximal alternatives is very similar to the referentiality requirement but is more general. In this case, the semantics of the aboutness topic operator is vacuous as far as the assertion is concerned, but there are discourse functional effects amounting to contrast, see [Buering, 1997]. The semantics of the frame setting topic amounts to asserting the matrix clause, drawing the attention of the hearer to the topical proposition beforehand. We do not discuss the formal implementation of this idea for the moment.

Crucially, V1-structures, interpreted as questions, are inquisitive and should not be allowed in any topic position. We assume, however, that applying the *Highlight* operator beforhand makes them suitable topical propositions. This leads to the interpretation of the V1 conditional as a proposition that somehow has to be combined with another full proposition. Assuming that the second

proposition has some overt or covert modal, the V1-highlighted proposition will end up in the restrictor of that modal and hence yield a conditional interpretation.

Of course, this does not predict that also V2-sentences can simply appear in the aboutness topic-position, and receive a conditional interpretation. This is because we assume that V2 in German is associated with very direct rules of manipulation of the common ground, which exclude a more static interpretation as a topic.

In the case of the frame setting topic, again, we have exactly one highlighted alternative, and ultimately we expect a biscuit conditional interpretation, as argued by Ebert and colleagues. Indeed, this interpretation is available, in fact the only possible interpretation. Whence the contrast between (14-a) and (14-b). However, we observe that the function of frame setting topics yields oddity in (14-b): It is weird for the speaker to draw the attention of the hearer to a possibility that involves his own state of mind.

(14) a. *Kommst du, ich gehe.
come you I go
intended: 'If you come I go.'
b. ?Hast du Hunger, es gibt was im Kühlschrank.
'If you are hungry, there is something in the fridge.'

For wh-clauses, we standardly assume that they denote multiple alternative possibilities. So, (15) can be modeled as a set of alternatives containing different instantiations of *wer*('who')

(15) Wer kommt nach Hause?
who comes to home
'Who comes home?'
a. $\{\lambda w$. Peter comes in $w, \lambda w$. John comes in $w, \lambda w$. Max comes in $, \lambda w$. Dan comes in $w...\}$

This multiple partition does not contain a highlighted alternative, hence the operator $Highlight(WH?)$ is not applicable. Therefore, wh-clauses cannot be interpreted in a topic position. This prediction is correct, as can be seen in example (2-c) above. Hence, we explained why yes-no questions behave differently than both assertions and wh-questions with regard to their potential to be interpreted as conditionals.

3 The presence of *auch*

In this section we extend the range of data by including the discourse particle *auch*. We show that our analysis can cope with the new arising data as well.

3.1 The data

In German, it is possible to generally add the particle *auch* ('too') to a conditional, hence yielding what has been called an irrelevance conditional in the literature, as shown in (16)

(16) Wenn Peter auch schläft, wir tanzen weiter.
If Peter too sleeps we dance on
'Even if Peter sleeps, we keep on dancing.' .

Once we add auch ('also') a V1 conditional can appear in a hanging topic position. This we can see, again since it is not 'counted' when checking the V2 constraint, as whithnessed in (17-a). Interestingly, leaving the V1-conditional with *auch* in the dislocation position we have analysed as an aboutness topic position, yields a marked or even unacceptable structure as in (17-b).

(17) a. Endet es auch vor Gericht, wir zahlen die Miete (trotzdem) nicht.
Ends it also in-front court we pay the rent (nevertheless) not
'Even if we end up in front of the court, we will not pay the rent.'
b. ??Endet es auch vor Gericht, zahlen wir die Miete (trotzdem) nicht.
Ends it also in-front court pay we the rent (nevertheless) not
'Even if we end up in front of the court, we will not pay the rent.'

Moreover, adding *auch* not only 'saves' V1 structures in the hanging topic position, but actually makes even wh-structures acceptable, but, again, only in the hanging topic position, as can be observed in the contrast between (18) vs. (19).

(18) a. *Wer kommt, ich gehe
who comes I go
intended: 'Whoever comes, I go.'
b. *Wer kommt, gehe ich
who comes go I
intended: 'Whoever comes, I go.'

(19) a. Wer auch kommt, ich gehe
who too comes I go
intended: 'Whoever comes, I go.'
b. *Wer auch kommt, gehe ich
who too comes go I
intended: 'Whoever comes, I go.'

The arising puzzle is: Why does the presence of *auch* change the acceptability of V1 and wh-clauses in the different topic positions?

3.2 Analysis

We assume that the particle *auch* in German acts as an non-inquisitive closure operator in such constructions, i.e. it acts as a classical disjunction over the set of alternative possibilities denoted by the inquisitive propositions it occurs in.

Using a version of inquisitive semantics, in which the non-inquisitive closure of a proposition, if generated compositionally, is added to its representation we end up with structures such as (20) vs. (21). We call such non-inquisitive propositions attentive propositions, and we assume with [Ciardelli et al., 2009] that their pragmatic function is to draw the attention of the hearer to the possibilities, which now are sub-possibilities of the "big" possibility, added by the non-inquisitive closure.

(20) $[\![$ Wer auch kommt $]\!] = \{\lambda w.$ Peter comes in $w, \lambda w.$ John comes in $w, \lambda w.$ Max comes in , $\lambda w.\exists x.x$ comes in $w\}$

(21) $[\![$ Kommst du auch $]\!] = \{\underline{\lambda w.$ hearer comes in $w}, \lambda w.$ hearer doesn't come in $w, \mathbf{W}\}$

The assumptions above that frame setting topics have the discourse function to draw the attention of the hearer to a certain possibility, and that topics require a non-inquisitive proposition (or exactly one highlighted alternative) we end up with the prediction, that both wh- questions and yes-no questions can appear in the frame setting topic function in a hanging topic position, whenever *auch* is added, since *auch* turns both wh-questions and yes-no questions not only non-inquisitive but also attentive. This is exactly as required by the data.

Finally, we have to answer one additional question: Why can questions with *auch* not appear in an aboutness topic position, i.e. left dislocated. Why is it that e.g. (19-b) is bad in German.

Our answer to this question involves the pragmatics of aboutness-topics: In principle, an irrelevance conditional interpretation is possible in the aboutness topic position, however, typically, the additional marking has to be pragmatically justified. This happens, whenever an alternative aboutness topic lends itself. However, in these cases, the aboutness topic is always the entire set of worlds (excluding those in which noone comes for wh-questions), and it is very hard to imagine any alternative possibility to such an unlimited possibility. This correctly predicts the oddity of such examples. Because of this lack of alternatives, using *auch* constructions as aboutness-topics, appears marked or even unacceptable.

4 Conclusion

In this paper we have provided an analysis of V1-conditionals, i.e. yes-no questions with conditional interpretation in a topic position in German. Our analysis is based on the idea that topics can pick out the highlighted alternative of a polar question. We have shown that the analysis sketched above not only correctly predicts the possibility to use V1-questions as conditionals in German, but also correctly predicts the distributional facts regarding the presence and absence of the particle *auch* and the interaction with hanging topic position and the so called German left dislocation or fronting, which typically host frame setting topics and aboutness topics respectively. Adding up, the distributional picture that we correctly captured amounts to the one in Table 1:

	Yes no $+auch$	Yes no $-auch$	Wh $+auch$	Wh $-auch$
hanging topic	OK	$*$	OK	$*$
left dislocation	?	OK	??	$*$

Table 1. The distribution covered in this paper

The analysis leaves some questions open, however. For instance, we still have to examine the binding observations enumerated in [Ebert et al., 2008] which distinguish between hanging topics and left-dislocation, the presence or absence of the resumptive pronoun *dann* and its role in the interpretation, and finally, some of our more controversial data must be backed up with experimental research.

References

[Brasoveanu et al., 2011] Brasoveanu, A., Farkas, D., and Roelofsen, F. (2011). Polarity particles and the anatomy of n-words. In *to appear in: Proceedings of SUB12*, Utrecht.

[Buering, 1997] Buering, D. (1997). *The meaning of topic and focus: the 59th Street Bridge accent*. Routledge.

[Büring, 2003] Büring, D. (2003). On D-Trees, Beans, and B-Accents. *Linguistics & Philosophy*, 26(5):511–545.

[Ciardelli et al., 2009] Ciardelli, I., Groenendijk, J., and Roelofsen, F. (2009). Information, issues, and attention. In *Proceedings of SALT09*.

[Ebert et al., 2008] Ebert, C., Endriss, C., and Hinterwimmer, S. (2008). Topics as speech acts: An analysis of conditionals. In Abner, N. and Bishop, J., editors, *Proceedings of the 27th West Coast Conference on Formal Linguistics (WCCFL 27)*, pages 132–140, Sommerville, MA. Cascadilla Proceedings Project.

[Frey, 2004a] Frey, W. (2004a). A medial topic position for german. *Linguistische Berichte*, pages 153–190.

[Frey, 2004b] Frey, W. (2004b). Notes on the syntax and the pragmatics of german left dislocation. In Lohnstein, H. and Trissler, S., editors, *The Syntax and Semantics of the Left Periphery*, pages 203 – 233. Mouton de Gruyter.

[Groenendijk and Roelofsen, 2009] Groenendijk, J. and Roelofsen, F. (2009). Inquisitive semantics and pragmatics. MS University of Amsterdam.

[Lewis, 1973] Lewis, D. (1973). *Counterfactuals*. Harward.

[Lohnstein, 2000] Lohnstein, H. (2000). *Satzmodus - kompositionell*. Akadem, Berlin.

[Schlenker, 2004] Schlenker, P. (2004). Conditionals as definite descriptions (a referential analysis). *Research on Language and Computation*, 2(3):417–162.

[Tuckenbrodt, 2006] Tuckenbrodt, H. (2006). On the semantic motivation of syntactic verb movement to c in german. *Theoretical Linguistics*, 32(3):257–306.