

# Two strategies of reopening QUDs — evidence from German *auch* & *noch*<sup>1</sup>

Mira Grubic — University of Potsdam

**Abstract.** This paper argues for a domain restriction account for *wh*-words in questions using *resource situations*, in parallel with the domain restriction of quantifiers proposed in Kratzer (2011). It is argued that under a situation semantic account assuming resource situations, the different behaviour of additive particles can be explained: Under a *question under discussion* account, additive particles like *too* and *also* are used when a (possibly covert) question is ‘reopened’ in order to add a further true answer (Beaver and Clark 2008, i.a.). This paper suggests that there are two ways in which a question can be re-addressed: it can either be reopened with (i) a different resource situation or (ii) with a different topic situation. This can explain the different behaviour of the additive particles *auch* and *noch* in German.

**Keywords:** situation semantics, questions, additive particles

## 1. Introduction

The domain of *wh*-elements is contextually restricted, just like the domain of quantifiers: While in (2), there may have been many people at the party, but nobody relevant to the speaker/hearer, the question in (1) also only asks for party-goers relevant to the person posing the question.

- (1) Who came to the party? (2) Nobody came to the party.

Kratzer (2011) presents a situation-semantic account of quantifier restriction according to which a subsituation of the topic situation (= the situation that the utterance is about) is responsible for the restriction. This paper proposes that the same is the case for *wh*-questions like (1): the restriction of alternatives inherent in these questions is argued to come about via resource situations. The situation semantic background for this paper will be provided in section 2.

It is also argued that under a QUD account of additive particles, the behaviour of the German particles *auch* (= “also, too”) and *noch* (= “still”, “in addition”) provides evidence for such a treatment of *wh*-questions: First, *noch* is most felicitous with an overt topic situation shifter (e.g. *dann* ‘then’) in declarative utterances. Second, *noch* is the preferred additive particle in questions, whereas *auch* seems to indicate that the speaker knows the answer to the question (Umbach, 2012). Third, in contrast to *auch*, which requires the focus of the host sentence to be distinct from that of the antecedent, *noch* imposes no such distinctness requirement. It is argued here that these differences can be accounted for under an analysis that assumes that both *auch* and *noch* indicate that a previous question is reopened, but whereas *auch* indicates reopening of the question with respect to a new resource situation, *noch* indicates reopening of the question with respect to a new topic situation. The background assumptions concerning additive particles, the German data, the analysis and a comparison with earlier analyses are presented in section 3.

---

<sup>1</sup>I would like to thank the audiences at Sinn und Bedeutung and at the ESSLLI 2016 workshop “Formal, Probabilistic and Typological Approaches to Discourse Particles and Modal Adverbs” (where I presented a partly overlapping talk on the typology of additive particles) for their feedback.

## 2. Situations

### 2.1. The topic situation

In a situation semantic account, propositions are functions from situations (i.e. parts of worlds) to truth values. This means that the truth of a declarative utterance is evaluated with respect to the situation that it is about, its *topic situation* (Kratzer, 2011). Kratzer illustrates this using the example in (3) (from Barwise and Etchemendy, 1987: 122): Here, ‘*Claire has the three of clubs*’ is intuitively false, even though it is true in the evaluation world that Claire has the three of clubs. This intuition can be captured by assuming that this sentence is evaluated with respect to a subsituation of the evaluation world, a subsituation which is part of Game 1.

- (3) (Emily is playing a card game (Game 1), and somewhere else, Claire is playing cards (Game 2). Both have the three of clubs.)

Someone, watching game 1, mistakes Emily for Claire & says:

# Claire has the three of clubs.

The topic time (Klein, 1994), the interval about which the utterance makes a claim, temporally delimits the topic situation (Kratzer, 2011: §3). Temporal or locative adverbials provide further information about the topic situation (Klein, 2008: 289).

According to Kratzer (2011), the topic situation of a sentence can be derived from its *question under discussion* (QUD) (Roberts, 1998, 2012). In a QUD account, every declarative utterance is assumed to be an answer to an (often implicit) assumed hearer-question, the current question under discussion. In the absence of an explicit QUD, the focus/background division of the utterance indicates which implicit QUD the speaker attributes to the addressee at this moment in discourse. For example, an utterance with so-called *broad* focus, in which the whole sentence is in focus, is assumed to answer a very general question, e.g. *What happened?* (4)<sup>2</sup>, while an utterance with narrow focus, in which a subconstituent of the sentence is in focus, is assumed to answer a question which asks for the constituent in focus, e.g. (5). The topic situation of the answer is the same as that of its question, e.g. (a subsituation of) a specific party in (4) or (5).

- (4) (What happened?)  
Amy and Ben danced.

- (5) (Who danced?)  
AMY AND BEN danced.

The idea of implicit QUDs is used to model the idea each declarative utterance is believed, by the speaker, to address the currently most relevant lack of information that the hearer has.

The QUD account also accounts for discourse coherence, by proposing a hierarchy of questions (Roberts, 2012). Here, the notational convention used in Büring (2003) to display this hierarchy as a *discourse tree* is adopted, e.g. (6). The dominating nodes are superquestions, the daughter nodes subquestions, and sister nodes are in temporal order, such that questions further to the right are asked later. The current question under discussion is lowest in the tree.

<sup>2</sup>In the examples, SMALL CAPS are used to indicate stress (where relevant), **bold font** and *italics* are used for highlighting the important parts of the example. # is used for infelicity, ?? and ? for marginal felicity.

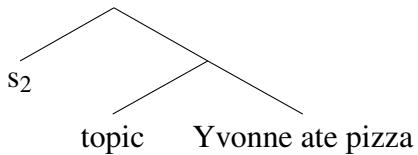
(6)

- Q1: What is the way things are?
- Q2: What is the way things were since we last met? ...
- Q3: What happened at the dinner last Sunday? ...
- CQ: What did Yvonne eat? ...
- A: Yvonne ate pizza

The topmost question “*What is the way things are*” is about the actual world  $w_0$ , to completely answer it would mean to know everything about our actual world, i.e. to be able to identify which world in context set is the actual world (Roberts, 2012: 5). Since this is impossible to answer in one sentence (if at all), this question is recursively split up into subquestions. Any superquestion entails its subquestions in the sense of Groenendijk and Stokhof (1984: 16): every complete answer to the superquestion also answers the subquestions (Roberts, 2012: 7). For example, a full answer to Q3 in (6), listing all that happened at the dinner, would also answer the current question *What did Yvonne eat?*. According to Schwarz (2009: 166), there is also a relation between the topic situations of the questions in the QUD hierarchy: each subquestion is about part of the situation asked about in its superquestion. For example, the situation of Yvonne eating something asked about in the current question is a subsituation of the dinner-last-Saturday-situation asked about in its superquestion Q3.

Following Schwarz (2009: 93–94), the topic situation is represented as a free situation pronoun (7), which is an argument to a topic operator (8). Applying this topic operator to a proposition and a topic situation yields the set of all counterparts (' $\approx$ ' is the counterpart relation) of the topic situation in which the proposition is true, see (9) for an example. Thereby, counterparts of the topic situation are situations in other worlds which in all relevant respects are exactly like the topic situation.

(7)



(8)  $[[\text{topic}]] = \lambda p. \lambda s'. \lambda s. s \approx s' \ \& \ p(s)$

(9)  $[[s_2 \text{ topic } Yvonne \text{ ate pizza}]]^g$   
 $= \lambda s. s \approx g(2) \ \& \ Yvonne \text{ ate pizza in } s$

Since the topic situation pronoun is free, it receives a value from the context, namely the situation that its immediate QUD is about. This situation is salient since the QUD is salient.

## 2.2. The resource situation

As discussed in Kratzer (2011), there is evidence that for quantifier restriction, another situation is needed, the *resource situation*. For example, as shown in (10) (from Soames, 1986: 357), there are cases of restriction to a subset of the individuals present in the topic situation. The topic situation here contains the test persons in a sleep lab, as well as the research assistants. The quantifier *everyone*, however, is implicitly restricted to the test persons. This is seen as

evidence that the restriction of quantifiers is not provided by the topic situation, but, in this case, by a subsituation of the topic situation.

- (10) **Everyone** is asleep and being monitored by a research assistant. (Soames 1986)

Similarly, examples involving so-called incomplete definite descriptions such as (11) (from McCawley, 1979: 378) can be used to argue for the necessity of resource situations. Definite descriptions like *the dog* require the referent to be the unique salient dog. In the topic situation of (11), however, there are two dogs. The felicity of such examples can be explained under the assumption that the referent is presupposed to be the unique salient individual of this kind in the resource situation (Schwarz, 2009), which in this case might involve members of the household.

- (11) (Context: the family dog got into a fight)  
I'll have to see to it that **the dog** doesn't get near that dog again.

One main proposal of this paper is that *wh*-phrases are also restricted via resource situations. The individuals that can potentially replace the *wh*-phrase in the answer are said to be restricted, too. For example, in (12), in the same sleep lab situation, the possible answers can plausibly be argued to be restricted to those that involve test persons.

- (12) Who is asleep and being monitored by a research assistant?

Additionally, in a question-answer sequence like (13), where the *wh*-phrase is replaced by a quantifier in the answer, the resource situation of the *wh*-element and the quantifier are arguably the same, again involving only the test persons.

- (13) Q: Who is asleep and being monitored by a research assistant?  
A: Everyone!

A question, in the QUD approach, denotes the set of its possible answers (14) (following Hamblin 1973). For example, the denotation of the question in (14) is a set of possible answers in which the *wh*-element is replaced by a relevant individual<sup>3</sup>. Thereby, the *wh*-phrase denotes a set of individuals. In (14), *who* the set of human individuals in the resource situation. The resource situation is represented as a situation pronoun, which is the first argument of *who*, cf. (15b), where the value for the free situation pronoun is provided by the assignment function *g*.

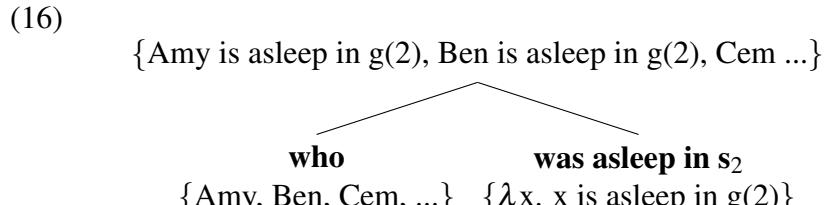
- (14) [[who was asleep]]  
       = {Amy was asleep, Ben was asleep, Cem was asleep, Dana was asleep ...}

(15) a. [[who]] =  $\lambda s. \lambda x. x$  is a human in  $s$   
       b. [[who  $s_1$ ]] $^g$  =  $\lambda x. x$  is a human in  $g(1)$

The *wh*-phrase is combined with the predicate via pointwise functional application (e.g. Rooth

<sup>3</sup>It is debated whether plural individuals are possible alternatives for singular individuals, cf. Beaver and Clark (2008) for discussion.

1992, 1996). This is a process of combining two sets, by which every member of the first set is combined with every member of the second set by standard functional application. Thus (14) is derived as shown in (16), or more generally in (17).



(17)

$$\begin{aligned} & [[\text{who } s_1 \text{ was asleep in } s_2]] \\ & = [[\text{was asleep in } s_2]] ([[[\text{who } s_1]]) \\ & = \{ \lambda s. s \approx g(2) \& x \text{ was asleep in } s \mid x \text{ is a human in } g(1) \} \end{aligned}$$

To sum up, statements are made about a topic situation, and evaluated for truth or falsity with respect to this topic situation. The topic situation can be identified with the help of overt cues, e.g. tense, temporal or locative adverbials, but usually it is identified because it is inherited from the sentence's QUD, the (usually implicit) hearer-question that the sentence answers. Evidence from the restriction of quantifiers and definite determiners shows that in addition, a resource situation must be assumed. The following section will present evidence from the German additive particles *auch* and *noch* that both topic and resource situations play a role for additive particles.

### 3. Additive particles

Additive particles like English *also/too* do not contribute to the truth-conditional meaning of the sentence, they merely introduce a presupposition. They are focus-sensitive: the presupposition changes when the placement of the focus changes.

- (18) John also introduced BILL to Sue.  
PRESUPP: John introduced somebody else to Sue.

- (19) John also introduced Bill to SUE.  
PRESUPP: John introduced Bill to somebody else.

The presupposition of additive particles is different from those of many other presupposition triggers (e.g. *stop*) in that it needs to be salient, i.e. on the minds of the speaker and the addressee, rather than merely mutually known. For example, the utterance in (20), *Mary stopped smoking*, is possible without the information that Mary used to smoke being recently mentioned or otherwise salient. For the additive particle in (21), *Bill smokes, too*, to be felicitous, the information that somebody else smokes (e.g. *Mary smokes*) must be recently mentioned, or in the immediate non-linguistic context (e.g. the addressee might be smoking at the time of utterance). If it is merely mutually known that somebody else smokes, but not salient at this time in discourse, this is not enough to license the use of *too*. For this reason, the additive presupposition has been classified as anaphoric (Kripke 2009; Beaver and Zeevat 2007; Tonhauser et al. 2013, i.a.)

- (20) Mary stopped smoking.  
 PRESUPP: Mary used to smoke  
 (doesn't have to be salient)
- (21) Bill smokes, too.  
 → Somebody (e.g. Mary) smokes  
 (has to be salient!)

There are several different ways to model the anaphoricity of additive particles (e.g. Heim 1992; Geurts and van der Sandt 2004, cf. Ruis 2015 for a discussion). The approach adopted here is a QUD account of additive particles. Under this account, additive particles are anaphoric because they indicate that the current QUD is already partially answered in the recent context (Beaver and Clark, 2008; Jasinskaja and Zeevat, 2009). For example, in the case of (21), the relevant part of the QUD hierarchy would look like (22): the same question has been asked and answered before, and is reopened, thereby indicating that the previous answer (*Mary smokes*) was a partial answer, and providing a further partial answer (*Bill smokes*).

- (22)
- 
- ```

    graph TD
      A1[...] --- B1[Who smokes?]
      A1 --- B2[Who smokes?]
      B1 --- C1[MARY smokes]
      B2 --- C2[BILL smokes, too]
  
```

The complete answer (*Mary and Bill smoke*) must be stronger than either of the partial answers alone. For this reason, examples like (23), where one of the answers entails the other, are infelicitous (Kripke, 2009; Beaver and Clark, 2008).

- (23) #Bill smokes, and Bill and Mary smoke, too.

This section introduced the general QUD account adopted in this paper. The following sections discuss the additive particles *auch* and *noch* in German. It will be argued that while both indicate that a QUD is reopened, *auch* indicates reopening with respect to the same topic situation (but a different resource situation), whereas *noch* indicates reopening with respect to a different topic situation.

### 3.1. German additive particles

In German, *auch* (=‘also’, ‘too’) is the standard additive particle. Unstressed *auch* associates with focus (cf. e.g. Jacobs, 1983; König, 1991; Krifka, 1998: i.a.). Like other German focus-sensitive particles, *auch* prefers to be as close to the focus as possible (see Büring and Hartmann 2001’s Closeness Principle), as shown in (24)-(25).

- (24) Gestern hat Johann **auch** BILL Susi vorgestellt.  
 yesterday has Johann PRT Bill Susi introduced.

‘Yesterday, Johann also introduced BILL to Susi.’  
PRESUPP: Johann introduced somebody else to Susi.

- (25) Gestern hat Johann Bill **auch** SUSI vorgestellt.  
yesterday has Johann Bill PRT Susi introduced.  
'Yesterday, Johann also introduced Bill to SUSI.'  
PRESUPP: Johann introduced Bill to somebody else.

There is also a stressed variant of *auch*, which associates with preceding out-of-focus constituents (Krifka, 1998). For example, Krifka shows that AUCH can associate with the unstressable pronoun *es* (= ‘it’), in contrast to *nur* (= ‘only’) and unstressed *auch*.

- (26) *Es* gehört AUCH Peter.  
it belongs.to also Peter  
'It belongs to Peter, too.'

(27) ??Nur/ auch *es* gehört Peter.  
only/also it belongs.to Peter  
'Only/Also it belongs to Peter.'

The corresponding examples with the stressable pronoun *das* (=‘that’), in contrast, are fine.

- (28) *Das* gehört AUCH Peter.  
           that belongs.to also Peter  
           ‘That belongs to Peter, too.’

(29) Nur/ auch *das* gehört Peter.  
           only/also that belongs.to Peter  
           ‘Only/Also that belongs to Peter.’

According to Krifka, AUCH associates with contrastive topics, i.e. topics marked with a certain accent (a “B accent”, cf. Jackendoff 1972), indicating a QUD hierarchy in which sister questions about alternatives to the contrastive topic play a role (Büring, 2003: 520). For example, if *Fred ate the beans* is pronounced with a contrastive topic accent on *Fred* and a focus on *beans*, it indicates a QUD hierarchy such as (30), indicating a following sister question which also addresses the question who ate what.

- (30) *Who ate what?*

```

graph TD
    Root[Who ate what?] --> Q1[What did Fred eat?]
    Root --> Q2[What did Mary eat?]
    Q1 --> S1[Fred ate the beans]
    Q2 --> S2[Mary ate the eggplant]
  
```

When AUCH associates with a contrastive topic, it indicates a QUD strategy like (31), in which a preceding sister question was answered in the same way.

- (31) *What belongs to who?*

**Who** does *the bag* belong to? **Who** does *the phone* belong to?  
| |  
*The bag* belongs to **Peter**      *The phone* belongs to **Peter**

The German particle *noch* (“still”) also has an additive use (Umbach, 2012; Eckardt, 2007;

Nederstigt, 2006), cf. (32) (from Umbach 2012: 1844).

- (32) Otto hat **auch/noch** einen SCHNAPS getrunken.  
Otto has PRT a Schnaps drunk.  
“Otto also drank a SCHNAPS.”  
(PRESUPP: Otto drank something else (e.g. a beer))

It however differs from better-studied additive particles like *also/too* (E.)/*auch* (G.) in interesting ways. The following section will describe some of these differences. The main claim will be that both additive particles indicate that a QUD is reopened. *Noch* indicates that it is reopened with respect to a new topic situation, whereas *auch* indicates that new alternatives are taken into consideration, i.e. that the resource situation is changed.

### 3.2. Differences between ‘auch’ and ‘noch’

This section describes three important differences between *auch* and the additive use of *noch*: First, that *noch* is most felicitous with overt topic situation shifters, second, that it is the ‘neutral’ additive particle in questions, whereas *auch* leads to ‘showmaster questions’ and third, that it allows for the reopened QUD to be answered in the same way.

**Overt topic situation shifters** In contrast to *auch*, additive *noch* is not entirely felicitous in standard additive contexts, where the antecedent (e.g. *Otto had a beer* is immediately followed by a parallel utterance ‘*He also had a schnaps*’, cf. (33)).

- (33) Otto had a beer.  
Er hat **auch/??noch** einen SCHNAPS getrunken  
he has PRT a schnaps drunk  
(intended:) “He also had a schnaps.”

Instead, *noch* is most felicitous if there is an overt indication of a shift in topic situation (e.g. with *dann* (‘then’), *ansonsten/sonst* (‘otherwise’)), see (34).

- (34) Otto had a beer.  
*Dann* hat er **noch** einen SCHNAPS getrunken.  
then has he PRT a schnaps drunk  
“And he also drank a schnaps.”

This is also discussed in Umbach (2012: 1851), who proposes that in such sentences, “*dann* indicates that the two answer events combined by *dann* do not overlap”, and provides example (35) as evidence. Here, according to Umbach, the thunderstorm (without rain) and the rain count as two separate, non-overlapping, events.

- (35) There was a thunderstorm

*Dann* hat es **noch** GEREGENET.

then has it PRT rained  
“It rained in addition.”

The reverse, i.e. that *auch* is most felicitous if there is no shift in topic situation, can be observed in cases of accommodation. For example, in (36)–(37), there is an overt indication of a new topic situation (*the next year*) in the host sentence of the additive particle, making it an utterance about a different topic situation than the overtly presented antecedent. In the case of *noch* in (36), this is not problematic: *noch* links these two utterances without any need for accommodation.

- (36) In 2014, Max visited his parents for Christmas.

*Das Jahr danach* hat er **noch** die Eltern seiner FREUNDIN besucht  
the year after has he PRT the parents of.his girlfriend visited  
“In addition, the next year, he visited the parents of his girlfriend.”  
→ He visited his parents in 2014 & his girlfriend’s parents in 2015

In the case of *auch* in (38), however, the prominent reading is that Max visited his and his girlfriend’s parents the next year, i.e. an antecedent about the same topic situation (*the next year*) is accommodated<sup>4</sup>.

- (37) In 2014, Max visited his parents for Christmas.

*Das Jahr danach* hat er **auch** die Eltern seiner FREUNDIN besucht.  
the year after has he PRT the parents of.his girlfriend visited  
“The next year, he visited the parents of his girlfriend too.”  
→ He visited his parents in 2014 & **his and his girlfriend’s parents in 2015**

Example (38) is a similar example: this is a variation of Umbach’s example (35), replacing *noch* by *auch*. Again, as in (37), the new topic situation — introduced by *dann* — is understood to involve a thunderstorm in addition to rain.

- (38) There was a thunderstorm

*Dann* hat es **auch** GEREGENET.  
then has it PRT rained  
“Then it rained, too.”

**Questions** In questions, *noch* is most felicitous, whereas *auch* indicates that the questioner knows that a further answer is true, i.e. the *auch*-question is a kind of ‘showmaster question’, according to Umbach (2012). For example, Umbach notes that in a context like (39), only Lisa’s aunt, who knows everything that happened at the zoo, can ask the *auch*-question in (39a). Lisa’s mother, who didn’t accompany them to the zoo and doesn’t know what happened there can only ask the *noch*-question in (39b). The *auch* question is thus asked by a person who already has a particular answer in mind, hence Umbach’s term ‘showmaster question’.

---

<sup>4</sup>This difference between *noch* and *auch* is very subtle, and is currently being experimentally tested.

- (39) (Little Lisa tells her mother what happened when she visited the zoo with Auntie.)
- A: Und was ist im Zoo AUCH passiert?  
 and what is in.the zoo PRT happened  
 ‘What happened at the zoo, too?’
- M: Und was ist im Zoo NOCH passiert?  
 and what is in.the zoo PRT happened  
 ‘What else happened at the zoo?’

This is accounted for by the current approach as follows: In the showmaster question in (40a), Lisa’s aunt reopens the same QUD with respect to a different resource situation, i.e. she indicates that in her first answer, Lisa has not taken all relevant alternatives into account. Reopening the QUD with respect to the same topic situation but a different resource situation, as in the case of *auch*, indicates that relevant alternatives were forgotten or ignored, whereas reopening the QUD with respect to a new topic situation, as in the case of *noch*, merely slightly shifts the topic of conversation, and is thus the ‘neutral’ variant in overt questions.

**Stressed ‘noch’** When a QUD is reopened using *noch*, the same answer is available again. According to Umbach (2012), *noch* in (40) associates with a deaccented focused constituent, namely ‘Schnaps’.

- (40) Otto had a schnaps. And you won’t believe it:  
 Er hat NOCH einen Schnaps getrunken. (#auch)  
 he has noch a schnaps drunk  
 “He had another schnaps.” / “# He had a schnaps, too”

Example (41), in contrast, is odd, independent of the accenting pattern.

- (41) Otto had a schnaps. And you won’t believe it:  
 #Er hat auch einen Schnaps getrunken.  
 he has noch a schnaps drunk  
 “# He had a schnaps, too”

This can be explained by the fact that, since the QUD (*What did Otto drink?*) is reopened with respect to a new topic situation in (40), the same answer (*Otto drank a schnaps*) will still be informative. In (41), in contrast, the QUD is reopened with respect to the same topic situation, thus only a different answer (e.g. *Otto drank a beer*) would be felicitous<sup>5</sup>.

To sum up, *auch* and *noch* differ first with respect to their occurrence with overt topic situation shifters, which is most felicitous with *noch*. Second, in questions, *noch* is the standard additive particle, while *auch* seems to indicate that the speaker knows the answer to the question. This

---

<sup>5</sup>There seems to be a connection between stressed *noch* and additive or incremental *more* (Greenberg, 2010, 2012), which Greenberg analyses as indicating further development of a previous eventuality.

(i) Otto had one more schnaps.

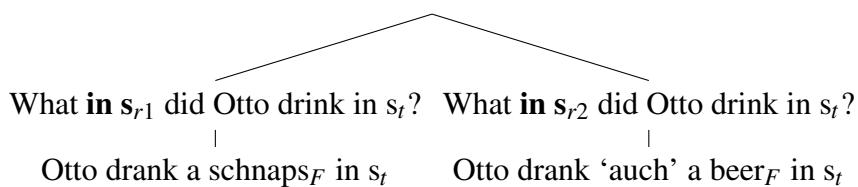
This is an interesting account, which would also complement nicely an account of *noch* along the lines of Ippolito (2007), but since the *noch* and *more* data differ in some respects, a discussion of this is left for future work.

was attributed to the resource situation-shifting nature of *auch*. Third, a *noch*-answer can be the same as its antecedent answer, while an *auch*-answer has to differ. This is due to the topic shift inherent with *noch*: it allows for the same alternatives to become available again.

### 3.3. Analysis of ‘auch’ and ‘noch’

Unstressed *auch* indicates that there is a previous answer to the same QUD, but with a more restricted set of alternatives. The current QUD extends this set to include previously neglected relevant alternatives. For example, the answerer in (42) might have thought of the alternatives {a schnaps, a glass of wine, a glass of cider} in the first answer, but forgotten the beer. By uttering an *auch*-sentence, she thus repairs this by considering a new domain of alternatives which now includes the beer. The question is thus reopened with respect to a new resource situation, as represented in the discourse tree in (42).

(42)

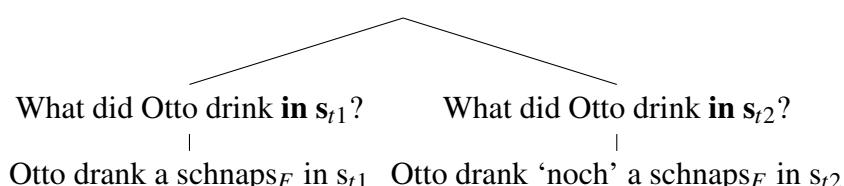


This is essentially the analysis given in Umbach (2012: 1860–1861) for unstressed *auch*, who proposes the term *extension question* for questions with shifted resource situations, cf. Umbach’s definitions in (43)–(44).

- (43)    unstressed *auch* in answers addresses an extension question;  
unstressed *auch* in questions indicates that the question is an extension question.
- (44)    A question  $Q=\langle B, D \rangle$  is an extension question with respect to a preceding question  $Q'=\langle B', D' \rangle$  iff (i)  $B=B'$ , (ii)  $D \cap D' = \emptyset$ , (iii)  $D \cup D'$  is a superordinate domain.

In contrast, *noch* indicates that there is a previous answer to a parallel QUD about a different topic situation in the discourse context, cf. (45).

(45)



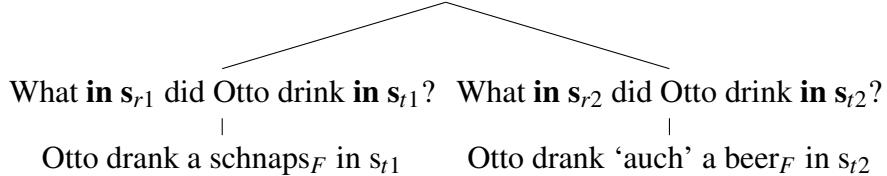
This requirement that the preceding QUD be about a different topic situation can be represented as in (46)–(47). Thereby, *noch* does not indicate anything about the domain of alternatives, i.e. it does not require the domain to be different or the same in the two questions.

- (46) *noch* in answers addresses a shifted question ;  
*noch* in questions indicates that the question is shifted.
- (47) A question  $Q=\langle B, D \rangle$  about  $S$  is a shifted question with respect to a preceding question  $Q'=\langle B', D' \rangle$  about  $S'$  iff (i)  $B=B'$ , (ii)  $S \neq S'$

### 3.3.1. Combining ‘auch’ and ‘noch’

Since it is possible to combine *auch* and *noch*, the account for *auch* does not require the topic situation to remain the same, and the account for *noch* does not require the resource situation to remain the same. The prediction thus is that both situations would be different from those of the antecedent, cf. (48), leading to a few predictions, briefly discussed below.

(48)



**Prediction I:** *auch noch* should allow for a topic situation shift (without accommodation) (49), like *noch*.

- (49) In 2014, Max visited his parents for Christmas.  
*Das Jahr danach hat er auch noch die Eltern seiner FREUNDIN besucht.*  
 the year after has he PRT PRT the parents of.his girlfriend visited  
 “The next year, in addition, he visited the parents of his girlfriend.”  
 → He visited his parents in 2014 & his girlfriend’s parents in 2015

**Prediction II:** *auch noch* should indicate a shift of resource situation, and thus lead to show-master questions (like *auch*), which seems to be the case: the question in (50) is much more natural when it is posed by the aunt than when it is posed by the mother.

- (50) (Little Lisa tells her mother what happened when she visited the zoo with Auntie.)  
 Auntie: Und was ist im Zoo auch noch passiert?  
 and what is in.the zoo PRT PRT happened  
 ‘What else happened at the zoo, too?’

**Prediction III:** *auch noch* should indicate a shift of resource situation, and thus disallow giving the same answer again (like *auch*). This is in fact the case: (51) is infelicitous, unless *auch* is understood to associate with the full VP in its scope, leading to the presupposition that

he did something else apart from drinking another schnaps. This is the reading obtained when *noch* is accented, and there is a slight pause between *auch* and *noch*.

- (51) Otto had a schnaps. And you won't believe it:  
#Er hat **auch noch** einen Schnaps getrunken.  
he has PRT PRT a schnaps drunk  
(intended:) "He had another schnaps."

### 3.3.2. Comparison with other approaches

**Dimroth 2002** The proposal presented here for *noch* is reminiscent of a proposal in Dimroth (2002) for stressed NOCH as in (52). Dimroth proposes that stressed NOCH associates with the topic time, just like stressed AUCH associates with a (contrastive) topic.

- (52) Otto had a schnaps. And you won't believe it:  
Er hat NOCH einen Schnaps getrunken.  
he has PRT a schnaps drunk  
"He had another schnaps."

A problem with this, which has already been voiced in Nederstigt (2006), is that if *noch* could associate with something topical and thus out-of-focus, it should be able to stand alone, as stressed AUCH can, cf. (53).

- (53) At 10p.m., Otto had a schnaps. And at 11 p.m.?  
AUCH./#NOCH.

The other accounts known to me (e.g. Nederstigt, 2006; Eckardt, 2007; Umbach, 2012) all assume that *noch/NOCH* associates with focus in all examples.

**Eckardt 2007:** Eckardt (2007) proposes that (unstressed) *noch* can be used to reopen a QUD if the previous answers are positive. According to her, the QUD is reopened as a sub-QUD, involving a subset of its super-QUD's domain, i.e. the discourse tree would look as in (54). *Noch* can also be used in such a reopened QUD, if it is overt.

- (54)
- Who (of A,B and C) can swim?  
Ali can swim Who (of B and C) can swim?  
|  
Ben can swim

This is used to explain the observation that *noch* is often used for the last element in a list of positive answers, cf. (A) in (55).

- (55) Q: Who (of A, B and C) can swim?  
A: ALI kann schwimmen, und BEN kann **noch** schwimmen, aber CEM *kann nicht schwimmen*.  
‘ALI can swim, and BEN can swim, but CEM can’t swim’

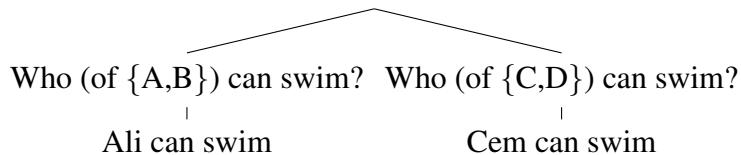
This account would predict that the answer in (56) is bad, prediction that I don’t share<sup>6</sup>.

- (56) Q: Who (of A, B and C) can swim?  
A: (#) ALI kann schwimmen, BEN *kann nicht schwimmen*, aber CEM kann **noch** schwimmen.  
‘ALI can swim, BEN can’t swim, but CEM can swim’

Umbach (2012), in her discussion of this account, notes that it is problematic because it cannot account for all of the differences between *noch* and *auch*. For example in *noch*-questions, the domain of alternatives is clearly extended.

**Umbach 2012** According to Umbach’s own proposal, *noch* and unstressed *auch* both reopen a QUD with an extended domain (57).

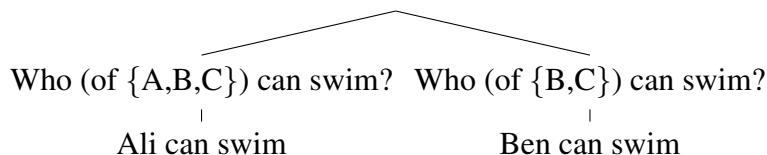
(57)



The main difference between the two is that the alternatives in the case of *noch* are in a temporal order, an order of (expected) time of mentioning. This temporal order allows to distinguish string-identical alternatives (*schnaps*<sub>1</sub>, *schnaps*<sub>2</sub>) in the case of stressed NOCH, which can not be distinguished in the case of *auch*.

For stressed AUCH, Umbach (2012) proposes that it reopens a QUD with a subset of the original domain, as Eckard had proposed for *noch*, cf. (58).

(58)



She analyses *auch* in *wh*-questions as an instance of stressed AUCH, with the *wh*-element as a topic. This accounts for ‘showmaster questions’:

- (59) Wer kann AUCH schwimmen? “Who can swim, too?”

---

<sup>6</sup>Note however that judgments on these particles are notoriously difficult.

The current account rejects the idea that the exact same QUD (about the same topic situation) can be reopened with respect to a subset of the same domain (as proposed by Eckardt for *noch* and Umbach for AUCH). Implicit QUDs essentially reflect **speaker assumptions** about the alternatives relevant for the hearer. Thus to remind the speaker that she forgot a relevant alternative means to extend the domain of alternatives.

In addition, an ordering of alternatives by order of mentioning is not adopted in the current account, since additive particles, being anaphoric, always involve another answer being mentioned earlier than the current one. It is therefore hard to imagine a context in which *auch* would be licensed but *noch* wouldn't under this account. A final difference between the current account and Umbach's is that the *wh*-element in AUCH-questions is not assumed to be a topic.

#### 4. Summary and Outlook

The behaviour of the German additive particles *auch* and *noch* provides evidence for resource situations in *wh*-questions: *auch* indicates that a QUD about the same topic situation is reopened, with a different resource situation, i.e. considering further alternatives, whereas *noch* indicates reopening of a question, but about a different topic situation.

There are several questions remaining for future discussion. First, many examples involving *noch* are very subtle. It is thus of vital importance to test the phenomena discussed in these papers with a large group of native speakers. This will be done in future work. Second, it is not entirely clear how the account for additive *noch* discussed in this paper relates to the other uses of *noch* as *still*, e.g. the temporal use in (60), the related locative use in (61), the marginality use in (62), and the comparative use in (63), i.a. (e.g. König, 1977; Löbner, 1989; Krifka, 2000; Umbach, 2009).

- (60) TEMPORAL/ASPECTUAL  
Es regnet noch.  
It rains still  
“It is still raining.”  
PRESUPPOSITION: It was raining earlier  
CONVERSATIONAL IMPLICATURE: It will stop raining soon
- (61) LOCATIVE/MARGINALITY  
Osnabrück liegt noch in Niedersachsen.  
Osnabrück lies still in Niedersachsen  
“Osnabrück is still in Lower Saxony.”
- (62) MARGINALITY  
Paul ist noch gemässigt. (Peter ist schon radikal)  
Paul is still moderate Peter is already radical  
“Paul is still moderate. (Peter is already radical)”

(63) COMPARATIVE

Berta ist noch größer als Adam..

Berta is still taller than Adam

“Berta is even taller than Adam.”

While the topic situation in (60) (e.g. “now”) is certainly different from that of the earlier event, the current analysis neither captures the presupposition that the two events are of the same kind (“rain”) nor the implicature that later, there will be no event of this kind. The analysis presented here can thus not easily be applied to cases like (60) and other, e.g. non-temporal, *noch* examples.

In contrast, it is a great advantage of the accounts of Eckardt (2007) and Umbach (2012) that they do intuitively relate to previous accounts of the temporal reading in (60). For example, Eckardt’s proposal that *noch* adds a positive answer to a QUD after a preceding stretch of discourse containing positive answers to this QUD is related to Löbner (1989)’s analysis of temporal *noch*, which assumes that (60) adds a current period of rain, after a presupposed preceding period of rain. Umbach, in contrast, relates her proposal to Krifka (2000)’s account, in which *noch* imposes an order on focus alternatives (e.g. *it is raining*, *it isn’t raining* in (60)) on a temporal scale, such that the alternative *it is raining* precedes the alternative *it isn’t raining*. Umbach assumes that the different alternatives, i.e. the current utterance and its antecedent, are also ordered on a temporal scale, but not concerning the event time of the mentioned events but concerning the time of mention in discourse: The *noch*-sentence presupposes an ordering such that there is an alternative that is lower on the scale, i.e. was mentioned earlier.

Therefore, an important aspect of future work on this particle will be to find a unified account for the additive use described here and temporal and other uses of *noch*.

## References

- Barwise, J. and J. Etchemendy (1987). *The Liar*. Oxford: Oxford University Press.
- Beaver, D. and B. Clark (2008). *Sense and Sensitivity: How Focus Determines Meaning*. Oxford: Wiley-Blackwell.
- Beaver, D. and H. Zeevat (2007). Accommodation. In G. Ramchand and C. Reiss (Eds.), *The Oxford Handbook of Linguistic Interfaces*, pp. 1–42. Oxford: Oxford University Press.
- Büring, D. (2003). On D-trees, beans, and B-accents. *Linguistics and Philosophy* 26(5), 511–545.
- Büring, D. and K. Hartmann (2001). The syntax and semantics of focus-sensitive particles in German. *Natural Language and Linguistic Theory* 19, 229–281.
- Dimroth, C. (2002). Topic, assertions and additive words: how L2 learners get from information structure to target language syntax. *Linguistics* 40, 891–923.
- Eckardt, R. (2007). ‘Was noch?’ navigating in question answer discourse. In A. Späth (Ed.), *Interfaces and interface conditions*, pp. 78–95. Berlin: De Gruyter.
- Geurts, B. and R. van der Sandt (2004). Interpreting focus. *Theoretical Linguistics* 30(1), 1–44.
- Greenberg, Y. (2010). Additivity in the domain of eventualities (or: Oliver Twist’s more). In M. Prinhorn, V. Schmitt, and S. Zobel (Eds.), *Proceedings of Sinn und Bedeutung 14*, Vienna, pp. 151–167.

- Greenberg, Y. (2012). Event-based additivity in English and Modern Hebrew. In P. Cabredo Hofherr and B. Laca (Eds.), *Verbal Plurality and Distributivity*, pp. 127–158. Berlin/Boston: de Gruyter.
- Groenendijk, J. and M. Stokhof (1984). *Studies on the Semantics of Questions and the Pragmatics of Answers*. Ph. D. thesis, University of Amsterdam.
- Hamblin, C. L. (1973). Questions in Montague English. *Foundations of Language* 10, 41–53.
- Heim, I. (1992). Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9, 183–221.
- Ippolito, M. (2007). On the meaning of some focus-sensitive particles. *Natural Language Semantics* 15, 1–34.
- Jackendoff, R. (1972). *Semantic interpretation in generative grammar*. Cambridge: MIT press.
- Jacobs, J. (1983). *Fokus und Skalen*. Tübingen: Niemeyer.
- Jasinskaja, K. and H. Zeevat (2009). Explaining conjunction systems: Russian, English, German. In A. Riester and T. Solstad (Eds.), *Proceedings of Sinn und Bedeutung 13*, Stuttgart, pp. 231–245. OPUS.
- Klein, W. (1994). *Time in Language*. London: Routledge.
- Klein, W. (2008). The topic situation. In B. Ahrenholz, U. Bredel, W. Klein, M. Rost-Roth, and R. Skiba (Eds.), *Empirische Forschung und Theoriebildung*, pp. 287–305. Frankfurt am Main: Lang.
- König, E. (1977). Temporal and non-temporal uses of noch and schon in German. *Linguistics and Philosophy* 1, 173–198.
- König, E. (1991). *The Meaning of Focus Particles. A Comparative Perspective*. London: Routledge.
- Kratzer, A. (2011). Situations in natural language semantics. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy*.
- Krifka, M. (1998). Additive particles under stress. In *Proceedings of SALT 8*, pp. 111–128. Cornell: CLC Publications.
- Krifka, M. (2000). Alternatives for aspectual particles. Paper presented at the Berkeley Linguistics Society.
- Kripke, S. A. (2009). Presupposition and anaphora: Remarks on the formulation of the projection problem. *Linguistic Inquiry* 40(3), 367–386.
- Liu, H. (2009). *Additive particles in adult and child Chinese*. Ph. D. thesis, City University of Hong Kong, Hong Kong.
- Löbner, S. (1989). German schon — erst — noch: An integrated analysis. *Linguistics and Philosophy* 12, 167–212.
- Löbner, S. (1999). Why German schon and noch are still duals: a reply to van der Auwera. *Linguistics and Philosophy* 22, 45–107.
- McCawley, J. D. (1979). Presupposition and discourse structure. *Syntax and Semantics* 11, 371–388.
- Michaelis, L. A. (1993). ‘continuity’ within three scalar models: The polysemy of adverbial still. *Journal of Semantics* 10, 193–237.
- Mittwoch, A. (1993). The relationship between schon/already and noch/still: A reply to Löbner. *Natural Language Semantics* 2, 71–82.
- Nederstigt, U. (2006). Additive particles and scope marking in child German. In V. v. Geenhoven (Ed.), *Semantics in Acquisition*, pp. 303–328. Dordrecht: Springer Netherlands.

- Roberts, C. (1998). Information structure: Towards an integrated formal theory of pragmatics. Revised version of the paper published in Jae Hak Yoon and Andreas Kathol (eds.) OSUWPL Volume 49: Papers in Semantics, 1996. The Ohio State University Department of Linguistics.
- Roberts, C. (2012). Information structure: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics* 5(6), 1–69.
- Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics* 1(1), 75–116.
- Rooth, M. (1996). Focus. In S. Lappin (Ed.), *The handbook of contemporary semantic theory*, pp. 271–297. London: Basil Blackwell.
- Ruys, E. G. (2015). On the anaphoricity of too. *Linguistic Inquiry* 46(2), 343–361.
- Schwarz, F. (2009). *Two Types of Definites in Natural Language*. Ph. D. thesis, University of Massachusetts, Amherst, MA.
- Soames, S. (1986). Incomplete definite descriptions. *Notre Dame Journal of Formal Logic* 27, 349–75.
- Tonhauser, J., D. Beaver, C. Roberts, and M. Simons (2013). Towards a taxonomy of projective content. *Language* 89, 66–109.
- Tovena, L. M. and M. Donazzan (2008). On ways of repeating. *Recherches Linguistiques de Vincennes* 37, 85–112.
- Umbach, C. (2009). Comparatives combined with additive particles: The case of German *noch*. In *Proceedings of Sinn & Bedeutung 13. Stuttgart*.
- Umbach, C. (2012). Strategies of additivity: German additive *noch* compared to *auch*. *Lingua* 122(15), 1843–1863.
- van der Auwera, J. (1993). Already and still: beyond duality. *Linguistics and Philosophy* 16, 613–653.