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'Was noch?' Navigating in Question Answer Discourse

1 Temporal uses of *noch*

The temporal particles *noch*, *schon*, *noch nicht* and *nicht mehr* have inspired lively discussion in the last decades. These particles are generally assumed to refer to subsequent phases in time in which a given proposition *p* switches its truth value from true to false, or from false to true. I will specifically base my discussion on the treatment in Löbner (1991) that was further refined in Max & Malink (2001), Zybatov & Malink (2003). They propose that the temporal use of *noch* in a sentence like (1) has the pragmatic effects listed in (2).

- (1) Das Kind schläft noch.
The child is still sleeping.
- (2) a. The sentence refers to a specific reference time t_r which is in a reference interval I_r .
- b. The sentence presupposes that there is a time t in I_r such that $\forall t' (t' < t \leftrightarrow \llbracket \text{das Kind schläft} \rrbracket \text{ true at } t')$
- c. The sentence asserts that t_r is *before* the time of switching t .

The state of affairs that is described by a use of *noch* can hence conveniently be illustrated by the little figure in (3).

Already Doherty (1972), König (1977a) point out that *noch* shows non-temporal scalar uses that arise by transferring the meaning contribution

of temporal *noch* to other scales. The examples in (4) and (5) refer to the local scale of a fictitious journey, and the atemporal scale of political involvement.

- (4) Potsdam liegt noch in Brandenburg.
Potsdam is still in Brandenburg.
(5) Otto ist noch gemäßigt.
Otto is still moderate (in his political attitudes).

If we replace the time scale in the definition in (2) by the scale defined by a journey through Brandenburg and Berlin, or the scale of increasing political involvement, the resulting semantic characterizations will successfully capture the examples in (4) and (5) respectively. Again, we can visualize the case with the figures in (6) and (7).

All uses of *noch* rest on some kind of scale. In all cases, the speaker's attention is focused on a fixed reference interval. The sentences in question presuppose that within this interval a switch from an initial p -phase (where p is given by the content of the sentence) to a non- p phase takes place. The restriction to a reference interval is crucial in most examples. If we take example (1), we will expect that on the time line as a whole there will be many switches from phases of the child sleeping to phases of the child awake and back again. The strong requirement in (2b) can only be met if we consider a comparatively short time. Similar observations hold in example (3). As we know, the state of Berlin is surrounded by Brandenburg. From a global perspective, hence a trip may well bring us from Brandenburg into non-Brandenburg and back to Brandenburg again. Only a short travel will split up cleanly into two phases. Atemporal scales, such as the one in example (4), are often organized in such a way that the non- p phase is co-

extensional with the entire higher end of the scale. The acceptability of sentence (4) hence does not seem to rest on the assumption that we restrict attention to a closed interval on that scale. Other examples, however, illustrate that the notion of a bounded interval still plays a role in atemporal uses of *noch*. Consider (8) in a situation where we are talking about several containers of water, ordered by temperature.

- (8) Dieser ist noch **unangenehm** (kalt), aber der ist schon **angenehm**.
This one is still **disagreeably** cold, but this one already **nicely** warm.

If we assume that there might be containers with boiling hot water, it is clear that not any temperature above a certain threshold can count as "not disagreeable" i.e. agreeable. Hence I conclude that, if the given scale is fine-grained enough, we still see the effect of *noch* referring to a bounded interval. This common feature of all scalar uses of *noch* will soon be of interest because the discourse oriented uses of *noch*, to which I will turn presently, show reflexes of this aspect of the meaning of *noch*.

2 Discourse oriented *noch* in assertions

In the last section of his 1977 paper on temporal and non-temporal uses of *noch*, König lists sentences like the one in (9) as topics for future investigation:

- (9) Ich kenne noch einen Mann, der Russisch spricht.
I know 'yet another' man, (one) who can speak Russian

Sentence (9) is ambiguous between a use with stressed *noch* and a use with unstressed *noch*. The readings are given in (10). I will concentrate on cases like (10a) in the present paper, leaving stressed *noch* in assertions aside for the moment. Uses like the one in (10b) should eventually be derivable from an analysis of *noch* like in (10a) plus further facts about accent placement in discourse.

- (10) a. Ich kenne noch einen Mann, der **RUSSISCH** spricht.
I furthermore know a man who speaks Russian (in addition to the man who **speaks** Chinese and the man who speaks **Swahili**)
b. Ich **kenne** **NOCH** einen Mann, der Russisch **spricht**.
I know yet another man who speaks Russian.
I.e. I know at least two men who speak Russian.

Such uses clearly have a list flavour, as the paraphrase in (10a) indicates. At first glance, the use of *noch* seems to resemble *auch* 'too'. Like *too*, it presupposes the truth of further positive statements of a similar nature. In the present section, I will characterize the uses of *noch* in more detail.

First note that *noch* in this use is focus sensitive. The minimal pair in (11) demonstrates this. In (11a) we are concerned with the persons who can swim, and list Else as a further swimmer. In (11b), in contrast, we are talking about the sporting skills of Else and assert that swimming counts among these.

- (11) a. ELSE kann noch schwimmen.
 Else can 'noch' swim.
 ≈ ELSE can swim, too
 b. Else kann noch SCHWIMMEN.
 ≈ Else also can SWIM

Note that the English translations are rough paraphrases rather than faithful semantic equivalents. In fact, we find crucial differences between the use of *auch* 'too' and *noch*. A first difference consists in the fact that *auch* 'too' can be used to list facts without an expectation about a negative phase. Let us go back to a scenario where we want to know whether Hewey, Louie and Dewey can swim.

- (12) a. Tick kann schwimmen, und TRICK kann noch schwimmen,
 (aber) Track kann nicht schwimmen.
 Tick can swim, Trick can 'noch' swim, (but) Track can not swim
 b. #Tick kann schwimmen, und TRICK kann noch schwimmen,
 und TRACK kann noch schwimmen.
 Tick can swim, and Trick can 'noch' swim,
 and Track can 'noch' swim,
 (13) Tick kann schwimmen, und TRICK kann AUCH schwimmen,
 und TRACK kann AUCH schwimmen/und auch TRACK kann schwimmen.
 Tick can swim, and TRICK can ALSO swim, and TRACK can ALSO swim/
 and also TRACK can swim,

Example (12a) is fine, because the listing proceeds from positive assertions to a negative one. Example (12b) is strange without further context. If it is clear that our attention is restricted to the three nephews, then (12b) shows an illegitimate use of *noch*. As a rescue, the reader might infer that we are talking about more people than just Hewey, Louie and Dewey, leaving for instance Donald and Daisy as possible non-swimmers. Example (13) illustrates that *auch* poses no similar

restrictions. It is acceptable to list three positive statements, where *auch* refers to earlier positive instances of people being able to swim.

As a first evaluation, we can hence state that *noch* in discourse orientation seems to refer to the linear order of discourse referents in which they are mentioned and attributed a certain property (here: be able to swim). The background of the sentence provides this property whereas the current discourse referent is in focus. The use of *noch* presupposes that the speaker intends to list the positive attributions first, and that there will be negative attributions for some individuals under debate. Formally, the following definition offers a good approximation:

(14) *noch* + S associates with focus.

Let A be the focussed element in S. The sentence presupposes that

- a. $\text{Alt}(A)$ is a restricted and fixed reference domain under debate,¹
- b. one or more alternatives $q \in \llbracket S \rrbracket^f$ were asserted in the last utterances in discourse
- c. there is a specific order on $\text{Alt}(A)$ such that for all $A', A'' \in A$, the assertion $\llbracket S \rrbracket(A'/A)$ was made before $\llbracket S \rrbracket(A''/A)$ iff $A' < A''$
- d. there is some alternative C such that $C < A'$ iff $\neg \llbracket S \rrbracket(A'/A)$ holds true.²

The sentence asserts its content under ordinary semantic evaluation.

The representation in (14) specifically captures the fact that *noch* requires a "negative phase" in the set of alternatives. The figure in (15) brings out the close relation between scalar *noch* and discourse oriented *noch*. Clearly, the discourse use of *noch* likewise refers to a scale, but unlike all other uses, the relevant scale is defined by the very fact that the speaker is talking about certain subjects in a certain order. There are more differences between the use of *auch* and *noch* that rest on the origin of the latter. Importantly, the use of *noch* requires that the ongoing discourse addresses a fixed and stable domain of individuals or objects whereas *auch* does not pose any such requirement. Consider the example in (15):

- (15) 2 ist eine gerade Zahl, 4 ist noch gerade, 6 ist noch gerade,
 #78 ist noch gerade, ...
 2 is an even number, 4 is 'noch' even, 6 is 'noch' even,
 #78 is 'noch' even ...

¹ This intuitive notion, as well as other related terms in (14) will be made more precise in the next section.

² Like in predicate logic, I use $\llbracket S \rrbracket(A'/A)$ to denote that proposition in $\llbracket S \rrbracket^f$ that arises by replacing the denotation of the focussed constituent A by its alternative A' and computing the sentence meaning.

The oddness effect of the last clause can be traced back to the fact that here at latest, it seems clear that the speaker has no fixed and finite reference domain in mind. She seems to produce examples for "being an even number" as numbers spring to mind. The first three clauses would be compatible with an organized listing of even numbers between, say, 1 and 10. The last clause, however, might only be licensed if the speaker faces a fixed range of, e.g., cards with numbers that accidentally include 2, 4, 6, and 78, and has been asked to single out the evens. Without further context the example violates the requirement that the search domain (the alternatives under debate) be finite. The analogous example with *auch* replacing *noch* is acceptable.

Another related difference between *noch* and *auch* consists in the observation that *auch* may be used as a topic changer whereas *noch* is incoherent under similar conditions. This is shown by (16) and (17).

- (16) Speaker A: (endlessly dominating conversation with reports about himself) ...
und letztes Jahr war ich in Paris. ...
... and last year, I was in Paris. ...
Speaker B (facing her chance):
Meine Tante Agathe war auch in Paris!
My aunt Agathe was also in Paris.
- (17) Speaker A: (similar)
... und letztes Jahr war ich in Paris. ...
... and last year, I was in Paris. ...
Speaker B:
#Meine TANTE AGATHE war noch in Paris!
My aunt AGATHE was 'noch' in Paris.

Why is (16) acceptable, but the use of *noch* in (17) is not? Evidently, the ongoing discourse was about Speaker A and his alternatives, excluding B's aunt Agathe. By bringing up Agathe, B attempts to change topic (in whatever sense of the word). Evidently, *auch* can be used as a means to provide an associative link between old and new topic. The use of *noch*, in contrast, is restricted to lists of assertions about a fixed and chosen set of individuals or objects. This fixed (and ordered) reference set of individuals corresponds to the fixed reference interval (on a scale) in the scalar uses of *noch* in section 1. Example (17) shows strikingly that we may not change this reference set. More examples to the same end will be discussed in section 4 when we turn to question-answer dialogues.

How can the semantic representation in (14) be amended in order to account for these observations? Examples like (15) lead to the further restriction that only finitely many in $\text{Alt}(A)$ may give rise to positive

assertions [S](A/A). The negative phase might be infinitely long. Examples like (16) and (17) are more difficult to integrate into (14) as it stands. They suggest that we need to keep track of a considerable stretch of discourse: What is the status of the reference set in (17)? How do we know whether an ongoing discourse possesses such a reference set? How long do we need to keep it? When are we allowed to introduce a new one?

We have now reached a point where it becomes necessary to make explicit assumptions about the structure of ongoing discourse. For this purpose, I will adopt a framework that was first suggested in Roberts (1996) and further developed and explored in Kadmon (2001) and Büring (2003). Büring's formal account of D-trees captures the informational skeleton of an ongoing discourse about a certain discourse topic. Like much other work in information structure, the theory explores the idea that a given discourse topic can be explicated by a question. Assertions in discourse address this global question, possibly breaking it up into smaller questions and answering these in turn. The account will not only be helpful in order to state the nature of the "reference set" that seems to play a role in *noch* sentences. It will moreover turn out that the particle has question-answer dialogues as its natural habitat, occurring in assertions and in corresponding function also in questions. In fact, *noch*-questions are a good example for questions that are posed by a speaker exactly in order to refer to, and bring out, the underlying informational skeleton along which the ongoing discourse is about to develop.

3 Question answer dialogues and *noch* in questions

3.1 The basic ideas

The discourse theory of Roberts (1996, 2004) and Büring (2003) rests on the assumption that an ongoing conversation can be chunked into pieces that address a fixed discourse topic. Discourse topics are explicated as questions. Several assertions, or question-answer turns can pertain to the same, constant discourse topic (also called "question under debate", QUD). The authors propose that the global question under debate – which sets the theme for the ongoing conversation – is usually split up into subquestions which are addressed one after the other, until the interlocutors feel that the issue is settled to their satisfaction. Importantly, Büring demonstrates that the much-debated raise accent (contrastive topic, B-accent) relates the single sentence to its

surrounding discourse ("strategy" in Büring's terms). An example of his is the following:

- (18) QUD: What did the pop stars wear?
 What did the male pop stars wear? – What did the female pop stars wear?
 The male/ pop stars wore \caftans. The female/ pop stars wore \cashubles.

Büring accounts for the fact that many of the assumed questions and subquestions are not usually explicated in discourse. Natural conversations do not proceed in a sequence of questions asked and answers given. Many questions remain implicit. For a discourse to be coherent and prosodically well-formed, the theory just requires that the explicated parts can be mapped onto a acceptable discourse tree that provides all necessary turns. The technical spell out of this idea can be found in Büring (2003).³

I want to elaborate the idea that German discourse oriented *noch*, like the prosodic patterns addressed by Büring, relates a sentence to its surrounding strategy. Let me first offer an example. The meaning of a question will be represented in the structured format in Krifka (2001).

- (19) Question under debate: Wer kann schwimmen? (Who can swim?)
 $\langle \lambda x. \text{Can-Swim}(x), \text{HUMAN} \cap C \rangle$
 Subquestion 1: Can Anna swim?
 Assertion 1: Anna kann schwimmen. (Anna ca swim.)
 remnant question 1: Who of $\text{HUMAN} \cap C \setminus \{\text{Anna}\}$ can swim?
 Subquestion 2: Can Else swim?
 Assertion 2: Else kann noch schwimmen. (Else can 'noch' swim.)

If we assume that the use of *noch* in fact rests on this kind of wider discourse context, at least two notions can immediately be stated more precisely than in the previous section. Firstly, we observed in the discussion of example (17) that the individual associated with *noch* must be one of a currently salient set of topical objects. This characterization can tentatively be spelled out as follows:

- (20) *noch* in assertions can occur in the n -th assertion of an ongoing strategy iff $n > 1$ and if all previous assertions pertained to the current question under debate positively (i.e. were a 'yes' answer to the local subquestion).

It follows as a corollary that no new discourse topic can be opened with a *noch* sentence. Moreover, the referent in the assertion containing

³ Note that Klein & von Steutterheim (1987) offer an early predecessor of QUD-theory, lacking perhaps its formal rigor but embracing more, and specifically German, data.

noch must be one in the search domain of the current question under debate. The mysterious "fixed reference domain" that we diagnosed in the discussion of examples in the previous section turns out to be the search domain of the current discourse topic. Secondly, the nature of the previous *n* assertions becomes clearer under an explicit discourse theory. They must all answer subquestions of the current global question under debate. The question under debate sets the polarity of these, and hence determines what counts as a "positive assertion". If we consider more examples, it becomes clear that positive assertions are not automatically non-negated assertions.

- (21) Wer hat keinen Schnupfen?
 Who doesn't have a cold?
 ANNE hat keinen Schnupfen.
 ANNE doesn't have a cold.
 SUSI hat noch keinen Schnupfen.
 SUSI does 'noch' have a cold.
 PAULE hat noch keinen Schnupfen. ...
 PAULE does 'noch' have a cold.

Although all assertions in (21) contain negations, they are nevertheless positive (partial) answers to the global question which itself contains a negation. Depending on the eventual characterization of "question answer discourse", we can state that a positive assertion is one that (i) denotes the proposition $P(a)$ for questioned property P and an object a in the search domain, or alternatively (ii) one that offers a 'yes' answer to its current sub-question of the QUD.

Reference to an explicit discourse theory can in the long run even help to characterise permitted interruptions of listing of the positive phase. Evidently, digressions like those in (22) should not prevent a legitimate use of *noch*.

- (22) Wer kann schwimmen?
 Who can swim?
 ANNE kann schwimmen.
 ANNE can swim.
 PAULE kann schwimmen.
 PAULE can swim.
 SUSI kann noch schwimmen.
 SUSI can 'noch' swim.
 (Digression:) Die war sogar schonmal Landersmeisterin im Freistil.
 (digression:) She even was champion in free style swimming.
 EVA kann noch schwimmen. ...
 EVA can 'noch' swim.

However, I will restrict attention for now to the basic cases. So far, questions in D-trees were used only as a device to represent the discourse structures in which the use of *noch* in an assertion is licensed. The particle *noch* however can also occur in questions in a discourse oriented meaning and it turns out that the questions that license *noch* are exactly those remnant questions in an ongoing discourse which would license a *noch*-answer. This fact is exemplified in the following.

- (23) Wer kann schwimmen?
Anne kann schwimmen.
Wer kann NOCH schwimmen?
- (24) Wer kann schwimmen?
Anne kann nicht schwimmen.
*Wer kann NOCH schwimmen?

In an ongoing discourse, *noch* is licensed in remnant questions where there are only positive preceding answers to (subquestions of) the global question under debate. *noch*-questions hence ask for the continuation of the positive phase in answering the global question.

The use of '*noch*' in questions offers new evidence for the claim that the "fixed search domain" for the global question corresponds to the reference interval I for scalar uses of *noch*. *noch* in questions once more differs from *auch* 'too' in that it requires that the presupposed propositions have been introduced under the current global question (discourse topic). Once more, *auch* in questions refers to other true propositions that may be known from no matter where. Consider the example discourses in (25).

- (25) Waitress first takes orders for coffee at table nr. 1. Turning then to table nr. 2, she asks
- a. Wer an diesem Tisch will AUCH Kaffee?
Who at this table wants coffee, too?
 - b. *Wer an diesem Tisch will NOCH Kaffee?
Who at this table wants *noch* coffee?

In the given context, it is clear that there are positive known answers to the question "*Wer will Kaffee?*" (who wants coffee?), yet not to the question with respect to the current search domain addressed by the speaker: who *at this table* wants coffee.⁴ Using *noch*, speakers hence

⁴ Note that the change of search domain could also be implicit. If the attitude of the waitress makes it clear that she did not think about the second table when she was taking orders at the first one, the same unacceptability will arise even if the question that she utters is "*wer will {auch/noch} Kaffee?*"

signal awareness of the current question under debate, and of the search domain that provides possible answers.

3.2 Technical spell out

In this section, I offer a first formal spell out of the ideas presented above. The resulting notion of a Question Answer Discourse (QAD) is a slight variant of Buring's D-tree. The reason why I do not simply want to copy his notions is the following: While Buring leaves the notion of a remnant topic (our remnant question) implicit in the D-tree, it plays a prominent role in the kind of discourse I investigate. I therefore want to assign it an own node in the discourse tree whereas Buring does not consider discourses where such remnant questions are explicated. Nevertheless, the two approaches show significant overlaps and I do not want to claim that a synthesis of both accounts were impossible. In the following, I will assume the structured format for question semantics.

I will first fix some notions about the relation between a question Q and an utterance S which can serve as an answer to Q . The notions are standard in the literature on questions and answers:

- (25) **Answerhood** in a given context: An assertion S constitutes an answer to a question $\langle P, A \rangle$ in a given discourse context C iff for at least one $a \in A$, the augmented context $C + [S] \models P(a)$ or $C + [S] \models \neg P(a)$.
- (26) **Complete answer** to question $\langle P, A \rangle$ in context C : An assertion S is a complete answer to $\langle P, A \rangle$ in C iff for all a in A , $C + [S] \models P(a)$ or $C + [S] \models \neg P(a)$.
- (27) **Partial answer**: An assertion S is a partial answer to $Q = \langle P, A \rangle$ in C iff S is an answer, but not a complete answer to Q .
- (28) **Subquestion** of a question Q in context C : A question Q' is a subquestion of Q in context C iff a complete answer to Q' in C is a partial answer to Q in C .
Specifically, the following types of question-subquestion relation hold against the empty context:
If $\langle P, A \rangle$ is a question and $A' \subset A$, then $\langle P, A' \rangle$ is a subquestion of $\langle P, A \rangle$ against the empty context.
If Q is a Wh-question $\langle P, A \rangle$ and Q' is a yes-no question for P about one $a \in A$: $Q' = \langle \lambda F.F(\wedge P(a)), \{\lambda p.p, \lambda p.\neg p\} \rangle$, then Q' is a subquestion of Q in the empty context.
- (29) **Remnant question**: A question R is the remnant question to a question Q in context C iff R is a subquestion to Q in the empty context, and a complete answer to R in context C is a complete answer to Q in C .
- (30) **Two partial questions** Q_1, Q_2 are equivalent to Q in context C iff any complete answer A to Q_1 in context C , and complete answer B to Q_2 in context $C + A$ together constitute a complete answer to Q . (In other words: the discourse $A. B.$ is a complete answer to Q in C .)

Next, we need to take care of the fact that the structure of a question answer discourse will be represented as a tree structure, whereas real conversation follows the linear order of time. We need to map utterances in a tree to a linear order, and we need to explicate the epistemic background for each utterance in a tree: all that the interlocutors have learned by utterances that precede a specific turn in the tree.

- (31) **Linearization of utterances in a tree:** Let QAD be a ordered tree (i.e. the daughter nodes of each node are ordered), and assume that some nodes in that tree are annotated with utterances u . The tree then defines a linear order on the utterances as follows:
- If an utterance u in the tree dominates an utterance u' in the tree, then u occurs before u' .
 - If an utterance u is a left sister node of an utterance u' in QAD, then u occurs before u' .
 - If an utterance u is dominated by a node $r(u)$ and u' is dominated by $r(u')$ in the QAD-tree, and if $r(u)$ is left to $r(u')$, then u occurs before u' in D .
- (32) **Local context** of node x in the QAD-tree (with utterances): Let C_0 be the context before the QAD started. Let $u_1, u_2, \dots, u_n$ be the utterances before x , in their actual order in the tree (i.e. u_i is before u_j iff $i < j$). The local context for x in the QAD-tree is $C := C_0 + [u_1] + [u_2] + \dots + [u_n]$. (The utterances may include both assertions as well as questions. Questions might contribute information by presupposition accommodation.)

On the basis of the preceding auxiliary definitions, we can now specify question answer discourse trees.

- (33) **Question Answer Discourse:** An ordered binary tree represents a coherent QAD iff
- Its root is a question.
 - No assertion dominates a question.
 - For all questions Q in QAD with local context C : The daughters of Q are either
 - i. two partial questions that together are equivalent to Q or
 - ii. an answer S plus the remnant question to Q in context $C+[S]$. (If the answer is complete, then the remnant question may be empty.)

The clause in (33ii) deserves a brief comment. I refrain from defining QAD-trees in such a way that all assertions are dominated by a question that they answer completely. So, for instance, I do not want to claim that in a discourse like in (34) there is a question node "*Can Elsie swim?*" that dominates the first assertion.

- (34) Who can swim?
 Elsie can swim. Who else can swim? ...

I want to maintain the possibility that QAD-trees can be augmented by focus conditions. The natural accent pattern for *Elsie can swim* as in (34) is with an accent on "Elsie" that coheres with the Wh-question. If we, however, assume a tacit yes-no question *can Elsie swim?* to intervene, we would expect that the accent in the answer is on the modal: *Elsie CAN swim*. This would be an unwelcome prediction. I therefore conclude that partial answers in QAD address the global question.⁵ The conditions of use for *noch* in assertions and questions can, finally, be made precise against this background:

(35) Use of *noch* in questions:

A question *q* in a QAD licenses *noch* iff
 it is a remnant question
 it is dominated by a question *Q* such that there are assertions between *Q* and *q*, and all assertions between *Q* and *q* are positive answers to *Q*.

(36) Use of *noch* in assertions:

An assertion *u* in a QAD licenses *noch* iff
u is a positive answer to its dominating question *q*, and
q licenses *noch*.

It remains to be mentioned that positive answers to wh-questions are answers that ascribe the respective property to an individual in the search domain (rather than negating it). "Yes" is the positive answer of a yes-no question.

The apparent association of *noch* with focus is no longer part of these definitions. In the present view, the relation between *noch* and focussing arises indirectly. The current question under debate will determine the property asked for, as well as the focus on that constituent which answers the wh-phrase in the question. As the current question under debate also determines the nature of the preceding partial answers, we predict that the structure of earlier positive answers will differ with focus, and eventually with the kind of question that is under debate. Therefore, the preliminary semantic characterization of *noch* in assertions that was proposed in (14) follows from the final version in (36).

⁵

It would not help to assume that non-explicit questions are irrelevant for prosodic realization. Observe that under certain circumstances, one *could* start a list answer with accents on the modals or negation, respectively: *So, let's see, who can swim? – Elsie CAN swim, Doro CAN swim, Judy can NOT swim, ...* It makes sense to assume that the speaker goes down a list of children, tacitly asking herself the respective yes-no question in each case. This shows that non-explicit questions do have prosodic consequences.

Note that the definition in (34) does not pertain to the root question of the QAD, but just to some dominating question. Hence, the definitions can even account for the frequent local uses of *noch* as in (37):

- (37) Ok, wer hat ein Taschenmesser dabei?
 Ok, who has a pocket knife?
 Anna hat ein Taschenmesser dabei.
 Anna has a pocket knife?
 Bertha hat keines, und Clara auch nicht.
 Bertha has none, and Clara neither.
 Aber Denise hat ein Taschenmesser dabei.
 But Denise has a pocket knife.
 Wer hat noch ein Taschenmesser dabei?
 Who has 'noch' a pocket knife?
 (Und) ELSE hat noch ein Taschenmesser dabei.
 ELSE has 'noch' a pocket knife.

One may wonder why speakers take the trouble of signalling the development of a positive phase even in such local circumstances. I think that the commitment to "being orderly" can be a very effective strategy in question answer discourse. It has often been observed that after a series of positive utterances in response to a question, the "remaining silent" can be interpreted by the hearer as the signal that the range of positive assertions wrt. the question has been exhausted. German speakers, by using *noch*, have the possibility to signal that they plan to stick to the pattern of "positive instances first, negative instances by silence". The cash-out from this strategy in question answering seems to balance the extra cognitive cost of evaluating additional pragmatic signals.

4 Multiple foci, multiple questions

The structure of discourse allows, and even requires, multiple topical questions in many instances. In our discussion of the use of *noch* I have so far restricted attention to the simplest possible constellation of a question-subquestion relation: We were looking at single Wh-questions that can be broken down into yes/no-questions and/or Wh-questions about a reduced search space. Can multiple questions give raise to the notion of a positive phase?

Curiously, the answer is "yes and no". The facts are that *noch* can be used in association with multiple foci (i.e. in answers to multiple

questions) but not in multiple questions. The examples in (38) and (39) illustrate this observation:

- (38) Wer kann **was** für ein Instrument spielen?
 Who can **what** kind of instrument play?
 Hanna kann **Trompete** spielen,
 Hanna can **trumpet** play,
 Suse kann **Saxophon** spielen, und
 Suse can saxophone **play**, and
 Berta kann noch **Blockflöte** spielen.
 Berta can 'noch' recorder **play**.
 (... dann kann noch Berta **Blockflöte** spielen.)
 (... then can 'noch' Berta **recorder** play.)

Uses like in (38) conform perfectly to the patterns that we investigated in section 2. In particular, tuples of discourse referents **can** be ordered on a scale according to their being mentioned in discourse like single discourse referents can. The question case seems more problematic.

- (39) Wer kann **was** für ein Instrument spielen?
 Who can **what** kind of instrument play?
 Hanna kann Trompete spielen.
 Hanna can trumpet play,
 a. #Wer kann NOCH was für ein Instrument spielen?
 Who can 'noch' what kind of instrument play?
 b. #Wer kann NOCH was spielen?
 Who can 'noch' what play?

The remnant questions in (39) are not appropriate ways to elicit further positive answers like those in (38). Curiously, the prohibiting factor seems to be prosody rather than pragmatics. In fact, questions like (39a) and (39b) would need to meet two prosodic requirements:

- (40) a. The wh-element in situ ("was für ein Instrument", "was") needs to be stressed.
 b. The particle '*noch*' in questions is always stressed in its discourse oriented use.

Failure to meet the requirement in (40a) will lead to a prosodically ill-formed utterance in (40a), and to a semantic interpretation of the **w**-pronoun as an indefinite in (39b), as has been pointed out by Haida (in prep.), Eckardt (2006). Hence, (39b) will most naturally be interpreted as "who can play some *second* instrument?"

Given the two requirements in (40), the remnant questions in (39) just have no proper prosodic realization. This diagnosis is confirmed by

the marginal acceptability of the double-wh-*noch* question if we put two accents:

- (41) Wer kann 'NOCH 'WAS spielen?

The two stressed items do not behave like double focus constructions; both accents seem to be of a kind which, under normal circumstances, should appear only once in an utterance. This is a curious observation that still waits for proper treatment. Interestingly, it seems to conflict with the spirit of the AvoidF principle in Schwarzschild (1999).

Discourse oriented uses of *noch* in association with double foci are accounted for by the definitions in section 3.2. We need to assume, however, that a question may license *noch* in pragmatic terms and yet never be uttered as a *noch* question for independent reasons. The deeper reason for the unacceptability of the co-occurrence of two accents like in (41) might be that both accents fulfil a speech act qualifying function, and that a speech act may be qualified in this way only once. Yet, the present treatment as it stands offers no evident handle to spell out this idea.

5 Outlook: Other particles in question answer dialogues

In the previous sections, I have discussed the origin and use of discourse oriented *noch* in questions and assertions, and have proposed a treatment in terms of question answer dialogue. Finally, I want to comment on two aspects of the resulting account.

Firstly, the reader may feel that a lot of definitional effort has been spent in order to capture just one single word's use. Has the effort been worthwhile? I hope that the discussion is worth its money, at least for the following reasons. On the one hand, we are still only beginning to understand larger chunks of discourse structure in those aspects that go truly beyond the literal sentence meaning. Therefore it is desirable to confirm and modify existing treatments of discourse structure in the light of new and independent data. On the other hand, there are more particles that support the notion of a question answer discourse. The particle *dann* in questions serves the complementary case of *noch*: It signals a series of negative answers (instead of a series of positive assertions) that pertain to a current question under debate. The particle *sonst* in questions simply signals that the question is remnant, rather than a top question. And the series of modal adverbs like *vielleicht*,

etwa, am Ende, etc. in yes-no questions signal a preceding series of misses in breaking up a current Wh-question into yes-no questions (see Eckhardt 2004). The whole group constitutes a micro paradigm with the function to protocol recent parts of current discourse. Formal treatments of discourse particles presently re-enter the agenda (Zeevat 2000, 2003) after a long period of neglect since early studies like the comprehensive Doherty (1973) or the collections in Abraham (1990), Weydt (1977). Hence, micro paradigms like the one in question can help to understand the discourse function of particles.

A final observation with respect to the use of protocol particles such as those that have been discussed here may be particularly vivid for the native German reader. In section 2 and 3, I stressed at various points that the use of *noch* contrasted in subtle ways with the use of other, similar particles like e.g. *auch* 'too, as well, also'. In actual practice, however, speakers frequently avoid any commitment to the subtleties carried by *noch* or *auch* by using them in combination: *auch noch* is a frequently used combined particle that seems to level out the differences between *noch* and *auch*. Examples are listed in (42) where dots ... stand for the appropriate kind of preceding discourse:

- (42) ... Susanne kann auch noch schwimmen.
 ... Wer (hier) will auch noch Kaffee?
 ... Wer war auch noch in Paris?

Without going into the details here, I assume that the use of *auch noch* allows the speaker to extend the relevant reference interval. In other words, (s)he can signal that the positive phase that was described to that point (e.g. coffee drinkers in (42b)) will be extended beyond the domain of individuals that had been considered so far without, however, violating the global strategy: positive instances first! Surprisingly, speakers have a strong preference for the order *auch noch* in contrast to the ungrammatical **noch auch*. Further investigations into the nature and scope of speech act associated particles seem necessary in order to come to a proper understanding of this fact.

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