

Another additive particle under stress: German additive *noch*

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German focus particle *noch*: four readings

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|--|--------------------|
| (1) <i>Es regnet noch.</i>
'It is still raining.' | temporal |
| (2) <i>Osnabrück liegt (gerade) noch in Niedersachsen.</i>
'Osnabrück is still in Lower Saxony.' | marginality |
| (3) a. <i>Otto hat noch einen SCHNAPS getrunken.</i>
'Otto had a schnaps in addition. ' | additive |
| b. <i>Otto hat NOCH einen Schnaps getrunken.</i>
'Otto had another / one more schnaps.' | |
| (4) <i>Berta ist noch größer als Adam.</i>
'Berta is still/even taller than Adam.' | comparative |

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Questions

Focus: additive reading of *noch*

1. What is the difference between additive *noch* and *auch* ('also', 'too') ?
2. How to explain the accent on *noch* and the difference in meaning between the unstressed and the stressed variant?
3. How does the additive reading relate to the other readings of *noch*?

Basically, *noch* is a scalar particle – aligned with some scale –
what does it mean for *noch* to be “additive”?

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The plan

1. Additive *noch* vs. *auch* (unstressed / stressed)
 2. Semantics for additive *noch* based on ordered sets of alternatives (cf. Krifka 2000)
 3. Conclusions
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4. Open issues
 - additive vs. temporal *noch*
 - strategies of additivity
 - two more apples* (Greenberg 2009)
 - vs. *noch zwei Äpfel*

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Auch vs. noch — unstressed (1)

- (5) *Otto hat ein Bier getrunken.*
'Otto had a beer.'
- a. *Er hat auch einen Schnaps getrunken.*
 - b. (?) *Er hat noch einen Schnaps getrunken.*
 - c. *Dann hat er noch einen Schnaps getrunken.* **real / discourse time**
'(Then) he also / in addition had a schnaps.'
- (6) *Isabelle ist sehr hübsch.*
'Isabelle is very pretty.'
- a. *Sie ist auch klug.*
 - b. # *Sie ist noch klug.*
 - c. *Dann ist sie noch klug.* **discourse time**
'(Then) she is also / in addition clever.'

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Auch vs. noch — unstressed (2)

- (7) (Otto wants to pay his bill and asked the barkeeper:)
Was hab ich denn alles getrunken?
'What did I drink?'
- Barkeeper: *Drei Bier, und eine Selters, und einen Kaffee, und dann noch einen Schnaps, gleich als du gekommen bist.*
'Three beer, and a selters, and a coffee, and in addition a schnaps, when you came in.'
- ! discourse time runs counter real time**

Hypothesis: additive noch is aligned with discourse time

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Additive particles

- associated with focus
- require an "antecedent alternative"
i.e. presuppose that the predication holds for at least one (proper) alternative of the expression in focus which has been **mentioned** before
(Rooth 1992, Krifka 1999, Saebo 2004)
- the antecedent cannot be accommodated, and is subject to more liberal accessibility conditions than regular presuppositions
(Zeevat 2004)

- (5a) (*Otto hat ein Bier getrunken.*)
Er hat auch [einen SCHNAPS]_{FP} getrunken.

↓
alternatives: {a-schnaps, a-beer, ... }

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"Additive particles under stress" Krifka (1999)

Stressed additive particles

- are associated with contrastive topics
- the accent on the particle indicates a focus, alternatives: {affirmation, denial}
- make it possible to "get around the distinctiveness constraint"

- (8) *What did Peter and Pia eat?* (= 48 in Krifka 1999)
- a. * */PEter ate \PAsta and /PIa ate \PAsta.*
 - b. *Peter and Pia ate \PAsta.*
 - c. */PEter ate \PAsta and /PIa ate pasta, \TOO.*

→ *TOO* makes up for a violation of the Gricean maxim of manner

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AUCH as well as auch indicate a supplement

Generalize Krifka's idea to unstressed *auch* (and regular topics):

- (9) *What did Otto drink?*
- a. ? *Otto hat ein Bier getrunken, (und) er hat einen Schnaps getrunken.*
'Otto had a beer. He had a schnaps.'
- b. *Otto hat ein Bier und einen Schnaps getrunken.*
'Otto had a beer and a schnaps.'
- c. *Otto hat ein Bier getrunken, (und) er hat auch einen Schnaps getrunken.*
'Otto had a beer. He had a schnaps, too.'

- *Auch* – stressed or unstressed – licenses a violation of the maxim of manner
- *Auch* provides a repair strategy:
pick up a previous predication and add another element
- *Auch* indicates a supplement

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Noch [as well as NOCH] indicate an enumeration

- (10) A: *Gestern auf der Party habe ich Otto getroffen.*
'Yesterday at the party I met Otto.'
- B: *War Paul auch / *noch da?* "Did you forget about Paul?"
- B': *Wer war *auch / noch da?* "Give me a guest list."
'Was Paul there, too / in addition?'

→ Additive *noch* indicates an enumeration

Hypothesis:

- auch* add a supplement → (unordered) set of alternatives
noch add a list item → ordered set / list of alternatives

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AUCH vs. NOCH — stressed

- (11) a. (*Paul hat einen Schnaps getrunken.*) 'Paul had a schnaps.'
(*OTTO hat AUCH einen Schnaps getrunken.*) 'Otto had a schnaps, too.'
- Paul + Otto
- b. (*Otto hat einen Schnaps getrunken.*) 'Otto had a schnaps.'
(*Dann hat er NOCH einen Schnaps getrunken.*) 'Then he had another schnaps.'
- one schnaps + another schnaps

Stressed *AUCH*

- associated with a contrastive topic
- accent on *AUCH* indicates focus in the comment

Stressed *NOCH*

- intuitively: associated with the adjacent phrase (11b: *einen Schnaps*)

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Two problems with stressed NOCH

- (11) b. (*Otto hat einen Schnaps getrunken.*)
Dann hat er NOCH einen Schnaps getrunken.

Suppose, *NOCH* is associated with the adjacent phrase:

- Problem 1: – why does the associated phrase not carry an accent?
– what does the accent on *NOCH* indicate?

- Problem 2: – how to distinguish kind-identical alternatives?

Alt(*einen Schnaps*) = {*a-schnaps*, *a-schnaps*} ?

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Stressed **NOCH** – how to interpret the accent?

Fery (2006) on stressed **AUCH**:

- (i) the accent is on **AUCH** because **any other position must be deaccented**,
 - the accent on **AUCH** is an emergency solution
 - the focus is deaccented
- (ii) stressed **AUCH** serves as an “accent holder”, without an additive meaning in these contexts (why not, e.g., **ja** ?)

→ Adopt (i) for stressed **NOCH**:

- (11b) (*Otto hat einen Schnaps getrunken.*)
Dann hat er NOCH [einen Schnaps]_FPP getrunken.
'Otto had a schnaps. Then he had another schnaps.'

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Side remark: Stressed **NOCH** need not be additive!

- (12) (*Es hat den ganzen Tag geregnet.*) *und es regnet NOCH.*
'It rained all day and it is still raining.'

meaning: "it is still raining",
not "there is an additional rain event"

→ temporal **noch**
stressed because any other position must be deaccented

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Kind-identical alternatives (1)

Problem 2: Stressed **NOCH** relates to kind-identical alternatives

in (11b) $\text{Alt}(\text{einen Schnaps}) = \{\text{a-schnaps}, \text{a-schnaps}\} ??$

$\text{Alt}(\text{einen Schnaps}) = \{x, y\}$ where $\text{schnaps}(x)$ and $\text{schnaps}(y)$

$x \neq y$ ← missing

Usually, alternatives can be distinguished by their descriptive content because the accent requires **contrasting** alternatives

No accent – no contrast,
→ alternatives have identical descriptions – how to distinguish?

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Kind-identical alternatives (2)

Hypothesis (suggested by unstressed **noch**):

Additive **noch** induces an order on alternatives aligned with the order of mentioning

stressed **NOCH**

- (11b) (*Otto ... Schnaps ...*) *Dann hat er NOCH [einen Schnaps]_FPP getrunken.*

a-schnaps_1 _{<mention} a-schnaps_2 _{<mention strict order, → $x \neq y$}

$\text{Alt}(\text{einen Schnaps}) = [\text{a-schnaps}_1, \text{a-schnaps}_2]$

unstressed **noch**

- (5c) (*Otto ... Bier ...*) *Dann hat er noch [einen SCHNAPS]_FPP getrunken.*

a-beer _{<mention} a-schnaps

$\text{Alt}(\text{einen Schnaps}) = [\text{a-beer}, \text{a-schnaps}]$

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Side remark: **Definite NPs**

- (13) (*Otto hat ein Bier getrunken.*)
Dann hat er noch den SCHNAPS getrunken (der auf dem Tresen stand).
'Otto drank a beer. Then he drank the schnaps standing on the counter.'

→ *noch* can be combined with definite NPs

- (14) (*Als die Gäste da waren, hat Otto hat den Schnaps vorgeholt.*)
a. **Nach dem Essen hat er NOCH den Schnaps vorgeholt.*
b. *Nach dem Essen hat er NOCH mal den Schnaps vorgeholt.*
'Before dinner Otto fetched the schnaps (bottle). After dinner he fetched the schnaps again.'

same object referent (schnaps bottle)

→ different event,

→ *noch (ein)mal*, associated with the VP

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Side remark: **Additional individuals / additional events**

- (15) *Am Wochenende hat Otto Tante Anna besucht und er ist noch nach Bünde gefahren.*
'During the weekend, Otto visited tante Anna and he went to Bünde.'

→ additive *noch* can relate to events

- (16) (*Vor dem Essen hat Otto einen Schnaps getrunken.*)
a. *Nach dem Essen hat er NOCH einen Schnaps getrunken.*
b. *Nach dem Essen hat er NOCH mal einen Schnaps getrunken.*
'Before dinner Otto drank a schnaps. After dinner he drank another schnaps / drank a schnaps again.'

→ events with identical descriptions must be added by *noch (ein)mal* ("event determiner")

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Side remark: **Additional individuals / additional events**

- (17) (*Otto hat einen Kuchen gekauft.*)
'Otto bought a cake.'
a. *Dann hat Otto noch / NOCH einen Kuchen GEBACKEN.* ambig?
b. *Dann hat BILL NOCH einen Kuchen gekauft.* individual
c. *Dann hat BILL noch / NOCH einen Kuchen GEBACKEN.* ?
'Then Otto / Bill bought / baked another cake.'
d. *Im Kühlschrank steht NOCH einen Kuchen.* individual
'Another cake is in the fridge.'

- (18) (*Otto hat einen Kuchen gekauft.*)
'Otto bought a cake.'
a. *Dann hat Otto noch einen BLUMENstrauß gekauft.* individual
b. *Dann hat BILL noch einen BLUMENstrauß gekauft.* individual
c. *Dann hat BILL noch einen BLUMENstrauß gepflückt.* ?
'Then Otto / Bill bought / picked a bunch of flowers, in addition.'
d. (?) *Auf dem Tisch steht noch einen BLUMENstrauß.*
'In addition a bunch of flowers is on the table.'

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Side remark: **What about stressed AUCH ?**

- (19) (*Otto hat einen Schnaps getrunken.*) 'Otto had a schnaps.'
a. *Dann hat er NOCH einen Schnaps getrunken.* 'Otto ...'
b. # *Dann hat er AUCH einen Schnaps getrunken.*

c. *Dann hat BILL noch / NOCH einen Schnaps getrunken.* 'Bill ...'
d. *Dann hat BILL AUCH einen Schnaps getrunken.*

- Why is (19b) unacceptable (in the context)?
- Why can stressed *AUCH* not be associated with the adjacent phrase?
- Why can't we have kind-identical alternatives in the case of *auch* ?

Because in the case of *auch* alternatives are not ordered.

→ *auch* sentences requires a difference in topic (*AUCH*) or comment (*auch*)

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Standard interpretation of temporal *noch*

(1) *Es regnet noch.* 'It is still raining.'

Löbner (1989), König (1991):

Temporal *noch* triggers **"past presupposition"** (It has been raining before)
"future implicature" (It will soon stop raining)

(focus was on the duality of *noch / schon*)

Ordered alternatives (Krifka 2000)

Krifka (2000):

account for the meaning of *noch/still* (and their duals *schon/already*) in a focus semantic framework

- Temporal *noch* (i) induces an **order on the set of alternatives** which is aligned with the order of time
- (ii) the focus is the **minimal element**
 → lower ranked alternatives are excluded;

STILL($\langle B, F, \leq_A \rangle$) iff $\langle B, F, \leq_A \rangle$,
 presupposing: $\forall X \in A [F \leq_A X]$

The restriction of the set of alternatives leads to pragmatic inferences, e.g., the future implicature in the case of temporal *noch*.

Is there no "past presupposition" ?? (would be excluded)

Additive *noch* does not trigger future implicatures

Temporal *noch*

(16) *Es ist noch SOMMER.* spring \prec_A summer \prec_A autumn \prec_A winter
 'It is still summer.'
 Future implicature: "It will soon be autumn"
 – due predictions about the future

—————→
real time

Additive *noch*

(5c) (... *beer...*) *Dann hat er noch einen SCHNAPS getrunken.*
 beer \prec_A schnaps \prec_A {juice, water,..}
 —————→
 discourse time

- no future implicature, due to lack of predictions about future discourse
- no minimality requirement

Semantics

Additive *noch* (unstressed / stressed)

- (20) $[[noch \alpha]]^0 = [[\alpha]]^0$
 presupposing
- (i) the set of alternatives $[[\alpha]]^F$ is ordered, \prec_A , aligned with the order of mentioning
 - (ii) there is an alternative $x \in [[\alpha]]^F$ such that x is lower ranked than the focus element, $x \prec_A [[\alpha]]^0$,
 - (iii) x is an antecedent – mentioned before – to be bound on update.

(add constraints concerning antecedent alternative?)

Uniform interpretation for all readings of *noch*?

All readings of *noch*

- (i) do not affect the assertion
- (ii) presuppose an order on the alternative set, aligned with
 - real time
 - discourse time
 - prototypicality
 - degree
- (iii) presuppose an alternative lower than the focus element
(a past event / antecedent)

Minimality requirement?

- **real world** orderings facilitates "future implicatures"
- the order of **mentioning** does not

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Conclusion

1. What is the difference between additive *noch* and *auch* ('also', 'too')
 - in contrast to *auch*, additive *noch* induces an **order on alternatives**
2. How to explain the accent on *noch* and the difference in meaning between the unstressed and the stressed variant?
 - accent on *noch* is an emergency solution, due to deaccenting requirements
 - no difference in meaning between the unstressed / stressed variant
3. How does the additive reading relate to the other readings of *noch*?
 - any reading of *noch* is scalar inducing an order on alternatives they differ with respect to the dimensions the order is aligned with
 - any reading of *noch* comes with a past/antecedent presupposition

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Open issues: additive vs. temporal *noch*

(21) (*Es hat gewittert*)

'There was a thunderstorm'

- a. *und es hat noch geregnet, als ich nach Hause kam.*
'and it was still raining when I came home.'

→ **temporal** thunderstorm including rain

- b. *und es hat noch geregnet. Ich bin klatschnass geworden.*

- c. *und dann hat es noch geregnet. Ich bin klatschnass geworden.*
'and it was raining in addition. I got wet all over.'

→ **additive** rain in addition to thunderstorm
additional event

What triggers the difference?

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Tovena & Donazzan (2008) On ways of repeating

- focus on *zai* in Mandarin Chinese, *encore* in French and *ancora* in Italian
- argue for a unified semantics of repetition, based on event structure and time intervals
 - including repetitive (*nochmal*),
 - continuative (*noch* temp), and
 - incremental (*noch* additive) repetition
- assume that repetitive adverbs always interact with the ordering of time
- do not take focus into account

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Greenberg (2009) Additivity in the domain of eventualities

(22) *Yesterday John interviewed three students. Today he interviewed two more (students).*

		<u>today</u>
comparative reading,	<i>more</i> _{comp}	5 students
additive reading,	<i>more</i> _{add}	2 students

Greenberg analyses *more*_{add} as an additive measure function

She also points out: "In many languages, the correlate of *more*_{add} can also function as an aspectual additive, like English *still*, e.g.

- Hebrew *od*
- German *noch*

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Strategies of additivity (1)

(23) (*When he entered the bar, Otto had a beer.*)

- Später hat Otto noch einen SCHNAPS / zwei SCHNÄPSE getrunken.*
- Later on Otto had a schnaps / two glasses of schnaps in addition.*

(24) (*When he entered the bar, Otto had a schnaps.*)

- Später hat Otto NOCH einen Schnaps / zwei Schnäpse getrunken.*
- Later on Otto had another / an additional / one more / two more (glasses of) schnaps.*

noch focus particle operating on (ordered) sets of alternatives
additional / more NP modifier

How to explain that the resulting effect appears the same?

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Strategies of additivity (2)

(24) (*When he entered the bar, Otto had a schnaps.*)

- Später hat Otto NOCH einen Schnaps getrunken.*

$[[\text{noch einen Schnaps}]]^0 = [[\text{einen Schnaps}]]^0 = \lambda P. \exists x. \text{ schnaps}(x) \ \& \ P(x)$
 $[[\text{noch einen Schnaps}]]^F \supseteq \{x, y\} \text{ with } \text{ schnaps}(x), \text{ schnaps}(y),$

presupposing x *<mention y*, where y is the focused element

- Later on Otto had an additional / one more / two more (glasses of) schnaps.*

$[[\text{one more schnaps}]] = \lambda P1 \lambda e1 \exists x [\text{ schnaps}(x) \ \& \ P1(x)(e1) \ \& \ \mu_h(e1) = 1]$

presupposing $\exists e2, e3 \exists P2, P3 \exists y, z [e3 = e1 + e2 \ \& \ z = x + y \ \& \ P2(y)(e2) \ \& \ \text{ schnaps}(y) \ \& \ P3(z)(e3) \ \& \ \text{ schnaps}(z)$

$\ \& \ \mu_h(e3) = \mu_h(e2) + \mu_h(e1)$

algebraic summation of participants

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Strategies of additivity (3)

- *more* has a **measure function as a denotation**
additivity is implemented by the algebraic (no overlap) summation of participants
- *noch* has **no denotation at all**
additivity is realized by the order on alternatives and the antecedent alternative
- The two strategies convey the same information
 - the order induced by *noch* entails the number of items (for singular NPs),
 - summation comes with the order on natural numbers.
- The two strategies may even be combined:
noch mehr Schnäpse comparative or additive
still more glasses of schnaps comparative
still another schnaps additive in a series
(*one schnaps ... another schnaps ...*).

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mehr – weitere – noch / NOCH mehr

(25) *Gestern hat John drei Studenten befragt.*
Heute hat er

- a. *mehr Studenten befragt.* comparative
- b. *weitere Studenten befragt.*
- c. *noch mehr Studenten befragt.* additive
- d. *NOCH mehr Studenten befragt.* comparative
(presupp: 3 are many)

Compare strategies (i) additivity expressed by discourse particles (*noch*)
→ "discourse management"

(ii) additivity expressed by adjectives (*weitere, additional*)
→ content

How does additivity relate to comparison?

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