The German particle *denn* in a Scoreboard model of discourse

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Outline

The German DiP *denn*

- In its use as discourse particle (DiP), German *denn* mainly occurs in (polar as well as constituent) questions (König 1977, Thurmair 1989, 1991, Kwon 2005, Csipak & Zobel 2014):

(1) a. Hast du denn ein Auto? — POLAR QUESTION
Do you DENN have a car?

b. Wo wohnst du denn? — CONSTITUENT QUESTION
Where do you DENN live?

c. *Ich habe denn ein Auto. — DECLARATIVE
I have DENN have a car.

d. *Komm denn her! — IMPERATIVE
Come DENN here!

The account of Theiler (2021)

- Theiler (2021) proposes an account of *denn* in terms of Conventional Implicatures (CIs):

  (2) Felicity condition of *denn*: (simplified)
  denn is felicitous in a question Q iff the speaker S requires a positive answer to Q to proceed in the discourse.

- Theiler distinguishes five cases, which differ regarding what exactly 'proceeding in discourse' comes down to.

Theiler's cases 1, 2 and 3

- In cases 1, 2 and 3, the speaker S uses a *denn*-Q to react to a previous discourse move by the addressee A, which is respectively an imperative, question or assertion.

(3) a. A: Hol mich um acht Uhr ab! IMPERATIVE
Pick me up at eight o'clock!

b. A: Kannst du mich um acht Uhr abholen? QUESTION
Kann you pick me up at eight o'clock?

c. A: Das Viertel, in dem ich wohne, ist echt schlimm.
The neighborhood where I live is really bad. ASSERTION

(4) S: Wo wohnst du denn?
Where do you DENN live?

Theiler's cases 1, 2 and 3

- In cases 1, 2 and 3, in order to proceed in discourse, S has to
  1. accept the felicity conditions of the respective speech act, and
  2. carry out the instruction imparted by the respective speech act, e.g. give an answer in case of a question as in (5).

$\Rightarrow$ *denn* can be used by S to signal
- that S has doubts about the felicity of the preceding speech act, or
- that S needs more information to execute the command/ give an answer/ integrate the information.

(5) a. A: Hast du einen festen Freund?
Do you have a steady boyfriend?

b. S: Was geht dich das denn an?
What's that DENN to you?

c. S: Was verstehst du denn unter einem 'festen Freund'?
How would you DENN define 'steady boyfriend'?

Theiler's cases 4 and 5

- In Theiler's cases 4 and 5, a *denn*-Q doesn't react to an explicit previous discourse move by the addressee.
- Central to case 4 is that S transparently entertains the plan to perform an action.
- To proceed, S has to carry out this plan.

(6) [S picks up A at his office to go to a talk as previously arranged.]
S: In welchen Raum findet der Vortrag denn statt?
In which room does the talk DENN take place?

- In case 5 the *denn*-Q is uttered in reaction to a salient piece of contextual information.
- To proceed, S has to accept this information.

(7) [S and A are walking by a lake that usually doesn't freeze.
S notices that the lake is frozen.]
S: Schau mal! War es denn diesen Winter kälter als normal?
Look! Was this winter DENN colder than usual?

Aims of this talk

In this talk:

- Building on and modifying Theiler (2021), we develop a Scoreboard-based analysis of *denn*.
- While Theiler anticipates that this can be done for the first three cases, she is skeptical about the latter two cases, where a *denn*-Q doesn't react to an explicit previous discourse move.
- We show that this can be done in a unified way for all five cases if certain assumptions are made about elements represented in the context structure and the way update works.
  - We recast Theiler's CI-based account of *denn* in the Scoreboard model (Farkas & Bruce 2010).
  - We assign a unified discourse function to *denn* for all five cases.
  - We argue that certain conditions in Theiler's original account –in particular, highlighting– don't need to be built into the analysis of *denn* but follow from more general principles of discourse organization.

Outline

Extended Scoreboard model

- Farkas & Bruce (2010) distinguish the following components of a context structure c (we leave discourse commitments aside):
  - *cs* (summarizing information in the Common Ground)
  - *Q* (stack of questions to be addressed)
- We add a To-do List (*TdL*) for each interlocuter (Portner, 2004).
- We distinguish, for each component, an actual and a projected version, represented here with * (see Farkas & Bruce 2010 for cs*, Biezma & Rawlins 2017 for Q*, Rudin 2018 for TdL*).

actual			projected		
What participants mutually accept	Participants' conversational goals	Participants' tasks			
cs_i	Q_i	TdL_{Ai} TdL_{Bi}	cs_i^*	Q_i^*	TdL_{Ai}^* TdL_{Bi}^*

Figure: Example context structure c_i

Context Update with an Assertion

- An assertion is a proposal to update the cs:

(8) $c_i + \ulcorner \text{ASSERTION}(\phi) \urcorner = \langle cs_i, Q_i, TdL_i, cs_i \cap [\![\phi]\!], Q_i^*, TdL_i^* \rangle$

	actual			projected		
c_1:	cs_1	Q_1	TdL_{A1}, TdL_{B1}			
A: *It is raining.* (p)						
c_2:	cs_1	Q_1	TdL_{A1}, TdL_{B1}	$cs_1 \cap p$		

Figure: Example Assertion Update

Context Update with a Question

- A question is a proposal to update the Q-stack:

(9) $c_i + \ulcorner \text{QUESTION}(\phi) \urcorner = \langle cs_i, Q_i, TdL_i, cs_i^*, \text{push}(Q_i, [\![\phi]\!]), Q_i^*, TdL_i^* \rangle$

	actual			projected		
c_1:	cs_1	Q_1	TdL_{A1}, TdL_{B1}			
A: *Is it raining?* $(\{p, \neg p\})$						
c_2:	cs_1	Q_1	TdL_{A1}, TdL_{B1}		push$(Q_1, \{p, \neg p\})$	

Figure: Example Question Update

Context Update with an Imperative

- An imperative is a proposal to update the addressee's TdL:

(10) $c_i + \ulcorner \textsc{imperative}(\phi) \urcorner = \langle cs_i, Q_i, TdL_i, cs_i^*, Q_i^*, TdL_{Ai} \cap [\![\phi]\!] \rangle$

	actual			projected		
c_1:	cs_1	Q_1	TdL_{A1}, TdL_{B1}			
B: *Sit down.* (p =sit-down(A))						
c_2:	cs_1	Q_1	TdL_{A1}, TdL_{B1}			$TdL_{Ai} \cap p$

Figure: Example Imperative Update

Acceptance

- Acceptance of a move corresponds to moving content from a projected component to the corresponding actual component, thus emptying the former (in the spirit of Biezma & Rawlins 2017).

(11) $c_i + \ulcorner \textsc{accept}(\phi) \urcorner = \langle cs_i^*, Q_i^*, TdL_i^*, \mathrm{W}, \langle\rangle, \mathrm{W} \rangle$

	actual			projected		
c_1:	cs_1	Q_1	TdL_{A1}, TdL_{B1}			
				A: *It is raining.* (p)		
c_2:	cs_1	Q_1	TdL_{A1}, TdL_{B1}	$cs_1 \cap p$		
				Accept		
c_3:	$cs_1 \cap p$	Q_1	TdL_{A1}, TdL_{B1}			

Figure: Example Assertion Update plus Acceptance

Proposals to update

- We propose that proposals to update *cs/Q/TdL* are triggered not just by the corresponding explicit discourse moves but also by e.g. non-verbal evidence.
- The difference between a proposal to update *cs/Q/TdL* and an actual update of *cs/Q/TdL* will be crucial.

Outline

The discourse contribution of *denn*-Qs

- *denn*-Qs are clarification requests in the sense of Ginzburg (2012).
- As such *denn*-Qs fall into the class of resistance moves (Bledin & Rawlins 2020)
- A *denn*-Q is an intermediate move between a proposal to update and the (intended) actual update.
- By uttering a *denn*-Q, a speaker
  - stops the projected context from becoming the actual context and
  - interleaves a new question that is relevant –i.e., stands in a tight QUD relation– to the previous utterance and needs to be dealt with first.

Implementation in the Extended Scoreboard model

(12) a. $c_i + \ulcorner \text{QUESTION}(\textit{denn}\ \phi) \urcorner = c_i + \ulcorner \text{QUESTION}(\phi) \urcorner$

b. Felicity constraint:

(i) $cs_i^* \neq \text{W}$, or

(ii) $Q_i^* \neq \langle\rangle$, or

(iii) $TdL_i^* \neq \text{W}$.

- The felicity constraint requires that there still be material in some projected component
- Thus *denn* explicitly signals that S hasn't accepted the previous discourse move, i.e., that the corresponding update proposal has not become an actual update
- This is particularly useful as acceptance moves can also be implicit.
- In sum, a *denn*-Q posits a novel question that is relevant to the previous move, which is still pending and awaiting acceptance (cf. discourse dependence of *denn* in König 1977, Thurmair 1991, Bayer 2012).

Illustrating Context Update with *denn*-Q

	actual			projected		
c_1:	cs_1	Q_1	TdL_{A1}, TdL_{B1}			
					A: *It is snowing.* (p)	
c_2:	cs_1	Q_1	TdL_{A1}, TdL_{B1}	$cs_1 \cap p$		
					B: *Is it* DENN *that cold?* ($\{q, \neg q\}$)	
c_3:	cs_1	Q_1	TdL_{A1}, TdL_{B1}	$cs_1 \cap p$	push($Q_1, \{q, \neg q\}$)	

Figure: Example Context Update with *denn*-Q

Reasons for using *denn*

- From a dynamic point of view taking discourse moves to be functions from input contexts to output contexts, the reasons for S to stop a proposed update can be twofold:
  - It could be that S feels that the conditions on **input** contexts, corresponding to the felicity conditions of the respective speech act, are not met.
  - It could be that S doesn't know how to make the update in a way such that the **output** context is suitable in the sense that
    - cs_o is consistent, and
    - Q_o is answerable (by the relevant interlocutor), and
    - TdL_o is executable (by the relevant interlocutor).

Outline

Illustration: *denn*-Q reacting to an assertion

(13) a. A: Tim hat gestern Mia getroffen.
Tim met Mia yesterday.
b. S: Woher weisst du das denn?
How do you DENN know that?
c. S: Ist sie denn schon aus dem Urlaub zurück?
Is she DENN already back from holidays?

- By uttering the assertion in (13a), A puts the proposition p (= 'that Tim met Mia yesterday') in the projected cs^*.
- Instead of accepting this proposal, S may put a hold on it because
  - S may not be sure that all input conditions are satisfied, e.g., S may not be sure that A had sufficient evidence to render his assertive speech act on p felicitous (13b), or
  - it may be that p clashes with S's believes, e.g., that Mia is still on holidays. So S is probing a way to revise her believes that will allow for a consistent update of *cs* with p (13c).

Illustration: *denn*-Q reacting to a question

(14) a. A: Kommt Mias Bruder auch mit?
Is Mia's brother coming too?
b. S: Hat Mia denn einen Bruder?
Does Mia DENN have a brother?
c. S: Wie heißt denn ihr Bruder?
What is DENN her brother's name?

- By uttering the question in (14a), A puts the question q (= 'Is Mia's brother coming too?') on top of the projected Q*-stack.
- Instead of accepting the proposal, S may put a hold on it because
  - S may not be sure that all input conditions are satisfied, e.g., S may not be sure that the presuppositions of q are met, see (14b).
  - It may be that S doesn't know how to answer q, e.g., because she doesn't know who Mia's brother is. So S is trying to get the information that will enable her to answer q, see (14c).

Illustration: *denn*-Q reacting to an imperative

(15) a. A (Boss): Hol morgen Herrn Maier vom Flughafen ab!
Pick up Mister Maier at the airport tomorrow!

b. S (Driver): Habe ich denn morgen Dienst?
Am I DENN on duty tomorrow?

c. S (Driver): Wann kommt er denn an?
When does he DENN arrive?

- By uttering the imperative in (15a), A puts the proposition r (= 'S picks up Mr. Maier at the airport tomorrow') in S's projected TdL*.
- Instead of accepting the proposal, S may put a hold on it because
  - S may not be sure that all input conditions are satisfied, e.g., S may not be sure that A has the authority, see (15b).
  - It may be that S doesn't know how to execute the command, e.g., because she doesn't know when Mister Maier will arrive. So S is trying to get the information that will enable her to execute the command, see (15c).

Outline

Back to Theiler's case 5

(16) [S and A are walking by a lake that usually doesn't freeze. S notices that the lake is frozen.]
S: Schau mal! War es denn diesen Winter kälter als normal?
Look! Was this winter DENN colder than usual?

- In Theiler's case 5, a *denn*-Q doesn't react to a previous discourse move but to nonlinguistic contextual evidence.
- To capture this, we assume (with Clark 1996 a.o.) that interlocuters naturally try to incorporate perceptual evidence into the CG.

Back to Theiler's case 5

Example (16) involves the following steps:

1. The frozen lake is part of a joint perceptual experience of both interlocutors (here made clear by *Look!*)

⇒ p (= 'the lake is frozen') is new public information that needs to be handled.

2. Even in the absence of an explicit Assert move, the interlocutors handle this new information via the update function ASSERTION.

⇒ $cs_o^* = cs_i \cap p$

3. S realizes that that moving $cs_i \cap p$ from the projected cs_o^* to the actual cs_o would lead to an inconsistent cs_o, as it clashes with the expected winter temperature.

⇒ $cs_i \cap p$ cannot be moved from the projected cs_o^* to the actual cs_o

5. S utters a *denn*-Q to place a hold on the discourse at this point and to request information that would render the cs_o consistent (e.g., on whether this winter was unusually cold).

Back to Theiler's cases 4

(17) [S picks up A at his office to go to a talk as previously arranged.]
S: In welchen Raum findet der Vortrag denn statt?
In which room does the talk DENN take place?

Theiler's case 4 can be handled in a similar vein:

- The *denn*-Q is likewise not used as reaction to an explicit previous discourse move by the addressee, but as reaction to an implicit (though still public) self-driven move.
- When picking up A, going to the talk becomes the item on S's projected TdL^* to be executed immediately.
- S realizes that she can't execute this action, because she is missing information about the room to go to.
- S utters a *denn*-Q to get the missing information.

Summary: cases 4 and 5

- Cases 4 and 5 have as common denominators:
  - The update proposals are not driven by an explicit previous discourse move by the addressee but rather by implicit (though still public) self-driven moves.
  - The reason to place a hold concerns output suitability rather than input conditions: as input conditions are typically felicity conditions on speech acts, they don't apply in self-driven moves.
- By distinguishing between update proposals and actual updates, the job of *denn* is defined not as to stop update proposals but as to stop their becoming actual updates.
- This equally applies after explicit discourse moves and implicit self-driven moves.
- By allowing proposed updates to be put on hold by objections to the input (= speech act infelicity) and by objections to the output (= lacking suitability), all cases of *denn*-Qs can be covered as objections.

Outline

Back to Theiler (2021)

- We have provided a Scoreboard implementation of Theiler's (2021) idea that *denn* in a Q signals that the speaker requires an answer to Q in order to proceed with the previous move.

- But Theiler's concrete implementation does not merely require an answer, but a **positive** answer:

(18) Felicity condition of *denn* (Theiler 2021:333):
It is felicitous for a speaker S to use *denn* in a question Q with **highlighted** property f iff S considers learning an **instantiation** of f a necessary precondition to **proceed** in the discourse.

(19)

	Q	highlighted f	instantiation
a.	Who came?	$\lambda x.\lambda w.$ come(x, w)	$\lambda w.$ come(ali,w)
b.	Did Ali come?	$\lambda w.$ come(ali,w)	$\lambda w.$ come(ali,w)

Back to Theiler (2021)

- Imperative move + polar-*denn*-Q

(20) [It is known that only A has a key to the door.]
A: You go on and open the door! I'll be there in a minute.
B: Brauche ich denn keinen Schlüssel?
Do I DENN need no key?

a. Highlighted content: $\lambda w.\neg$need(B,key)
b. Sample instantiation: $\lambda w.\neg$need(B,key)
c. Proceeding: adding original order *p* to TdL_B

(21) [It is known that only A has a key to the door.]
A: You go on and open the door! I'll be there in a minute.
B: ??Brauche ich denn einen Schlüssel?
Do I DENN need a key?

a. Highlighted content: $\lambda w.$need(B,key)
b. Sample instantiation: $\lambda w.$need(B,key)
c. Proceeding: adding original order *p* to TdL_B

Back to Theiler (2021)

- PolarQ move + polar-*denn*-Q

(22) [Only people younger than eighteen can buy discounted tickets.]
A: Am I eligible for the discount?
B: Bist du denn noch unter achtzehn?
Are you DENN below eighteen?

a. Highlighted content: λw.under(A,18yrs)
b. Sample instantiation: λw.under(A,18yrs)
c. Proceeding: answering the original PolarQ $\{p, \neg p\}$ positively

Back to Theiler (2021)

- Two points are worth noting:
  1. No positive answer required
  2. Explanation relation between the *denn*-Q and a mother-QUD

No positive answer required

1. Theiler's requirement for an instantiation of the highlighted f –i.e., for a positive answer– is too strong.
   (23) and (24) are felicitous, where a negative instantiation of the highlighted f of the *denn*-Q allows for proceeding positively with the original PolarQ, contra Theiler (2021):

(23) [A has previously expressed interest in buying B's start-up. B has signaled that she would sell her company only if no workers are laid out.]
A: Will you sell me your start-up company?
B: Werden Sie denn Arbeiter entlassen?
Will you DENN lay-out employees?

(24) [A, the dean of studies, is still looking for an instructor for course Ling567, which isn't popular with faculty. B doesn't want to teach it, but would be willing to do it if nobody else does.]
A: Are you willing to teach Ling567?
B: Wer würde das denn sonst unterrichten?
Who would teach it DENN otherwise?

Explanation relation

2. The examples that motivated Theiler's stronger condition, e.g. (25), all happen to involve an explanation relation between the *denn*-Q and a mother-QUD arising from the previous move's cs_o.

(25) [It is known that only A has a key to the door.]
A: You go on and open the door! I'll be there in a minute.
B: Brauche ich denn keinen Schlüssel?
Do I DENN need no key?
B': ?? Brauche ich denn einen Schlüssel?
Do I DENN need a key?

(26) Why is "B will open he door" executable?
Does one need no key to enter? /
Does one need a key to enter?

Bolinger's polar question paradigm

- The relation in (26) is parallel to Bolinger's suggested-answer cases like (27) and, more generally, to Bolinger's (1978) polar question paradigm, for which several analyses are available in the literature (van Rooy & Šafářová 2003, Tabatowski 2022).

(27) Why did John miss the meeting?
Was he sick? /
#Was he healthy?

Bringing notes 1 and 2 together

- Thus, the stronger requirement of *denn*-Qs for a positive answer in some cases but not in others seems to depend on the exact QUD relation between a mother-QUD raised by the previous move and the interleaved *denn*-Q:
  - If the relevant QUD relation is explanation, Utility Value pressures apply and a positive answer to the polar-*denn*-Q is needed to proceed in discourse.
  - If the relevant QUD relation is not explanation and Utility Value pressures do not apply, any answer to the polar-*denn*-Q –positive or negative– suffices to proceed in discourse.

- We leave for future research a refinement and formalization of this idea.

Outline

Conclusion

- Building on and modifying Theiler (2021), we have developed a Scoreboard-based analysis of *denn*.
- A *denn*-Q stops the projected context of the previous move *m* from becoming actual and interleaves a question Q that is relevant – i.e., stands in a tight QUD relation– to the input context c_i or output context c_o of *m*.
- Perceptual evidence and implicit self-driven updates are incorporated into the discourse via discourse moves, first to the projected cs_o^*/TdL_o^* and then to the actual cs_o/TdL_o, and is consequently susceptible to *denn*-Qs.
- A *denn*-Q just requires an answer to Q, not necessarily a positive answer to Q, in order to proceed with the previous move *m*.

Thank you!

Outline

More on note 1: No positive answer required

1. Theiler's requirement for an instantiation of the highlight f –i.e., for a positive answer– is too strong.
   Theiler's example in (22) is also felicitous with the opposite highlighted content in the polar-*denn*-Q. Here again, a negative instantiation of the highlighted f of the polar-denn-Q allows for proceeding positively with the original polarQ, contra Theiler (2021):

   (28) [Only people younger than eighteen can buy discounted tickets.]
   A: Am I eligible for the discount?
   B: Bist du denn über achtzehn?
   Are you DENN over eighteen?

More on note 2: Explanation relation

2. The examples that motivated Theiler's stronger condition, e.g. (29), all happen to involve an explanation relation between the *denn*-Q and a mother-QUD arising from the previous move's cs_o.

(29) [Party: Peter is very fond of Sophie but not so fond of parties: usually, he only goes to a party if she goes as well. Peter's feelings aren't returned by Sophie, though. So, she won't go to a party just because Peter is there. All of this is commonly known. Right now, A and B are talking at a big, difficult to overview party, wondering which of their friends are there.]

A: Peter is over there!
B: Ist denn Sophie auch hier?
Is DENN Sophie also here?

(30)

$\Downarrow$

Why is "Peter is over there" consistent with *cs*?
Is Sophie also here?

A: Sophie is over there!
B: # Ist denn Peter auch hier?
Is DENN Peter also here?

$\Downarrow$

Why is "Sophie is over there" consistent with *cs*?
Is Peter also here?

More on note 2: Explanation relation

2. The examples that motivated Theiler's stronger condition, e.g. (31), all happen to involve an explanation relation between the *denn*-Q and a mother-QUD arising from the previous move's cs_o.

(31) [Two Annas: A and B know exactly two people called Anna. One of them lives in Munich, the other one in Berlin. This is commonly known among A and B.]

A: Earlier today, Anna called.
B: Welche Anna meinst du denn?
Which Anna do you mean DENN?

A: Earlier today, Anna called.
B: # Meinst du denn Anna aus München?
Do you DENN mean Anna from M.?

⇓

Why is "Earlier today Anna callled" consistent with *cs*?
Is it because you meant Anna from Munich?

More on analyses of Bolinger's paradigm

- Bolinger's (1978) paradigm: suggested-answer cases

  (32) Why did John miss the meeting?
  Was he sick? / #Was he healthy?

- Analysis à la van Rooy & Šafářová (2003): Utility value

  (33) A proposition *p* has a higher utility value than ¬*p* if:
  a. *p* being true brings S closer to her goals than ¬*p* being true, or
  b. adding *p* to S's belief state triggers a wider revision than adding ¬*p*.

- Analysis à la Tabatowski (2022): Attitudinal semantics for polarQs

  (34) A polarQ *[p?]* expresses:
  'If *p* is true, coming to believe *p* is preferable than not coming to believe *p* given the speaker's informative and bouletic goals'

- Core idea:
  The speaker's immediate goal in (32) is to explain the mother-QUD "Why did John miss the meeting?"

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