German *doch* is an anaphoric mirative*

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1 Introduction

The German language has an impressive inventory of modal particles (MPs). Loosely defined, they:

- are unstressed and uninflected elements of the language
- mark the speaker’s mood or attitude toward an utterance
- are optional sentential elements
- when present, do not change the truth value of the sentence

These particles shape the structure of conversational interaction—they can point to a speaker’s intended goals.

BUT they are to some extent ineffable. How’s their meaning computed?

The unstressed MP *doch* is often analyzed as relating a speaker’s utterance to the state of the discourse. But exact relation is highly debated:

- CONTRADICTION (Diewald 2007, Grosz 2014, Müller 2014)
- EPISTEMIC NORMATIVITY (Thurmair 1989)
- RE-RESOLUTION of an issue (Rojas-Esponda 2013).

In an example like (1), we can see some of these interpretations:

(1) *Hans:* Der Super Bowl fängt gleich an!
    'The Super Bowl starts soon!'

    *Hanna:* Super Bowl? Das ist *doch* total langweilig.
    'Super Bowl? That's totally boring!'

(1) has been previously considered felicitous in discourse for the following reasons

i. $q$ contradicts $p$
ii. Hans should have (clearly) known $q$
iii. Hans’ assertion re-opens an issue considered established fact

But there are instances of *doch* that do not clearly fit into either of the three analyses above:

You and a friend are walking in the woods and although it's snowing, you encounter a crocus. You indicate the flower, and utter:

(2) (Aber) Es schneit *doch*!
    '(But) It’s snowing!'

The utterance in (2) isn't contradictory, isn't normative, and isn't a re-resolution.

* Doch* is referencing the sense that someone’s expectations have been violated.

Along the lines of Rett & Murray (2013), I propose that *doch* is, at its core, a mirative element

Roadmap

§2 gives a background on *doch* and its uses, and explores previous accounts
§3 proposes a novel account of *doch*, and broadens the range of interpretation
§4 makes a prediction
§5 concludes
2 Background

2.1 Data patterns

The MP *doch* has been shown to appear in a host of clause types:

- declaratives
- imperatives
- optatives
- wh-exclamatives
- wh-interrogatives
- tag/biased questions

But it is thought to be disallowed in others:

- polar questions
- non-wh-exclamatives
- factual conditionals

Unstressed *doch* and its counterpart stressed *DOCH* have a variety of interpretations, as well as . It's clear where many of these assumptions come from.

Favoring a CONTRADICTION account is clear, based not only on the phonological similarity with the polarity particle *DOCH* as in (3) (see Farkas & Bruce, 2010, Farkas & Roelofsen, 2012, Grosz, 2014)3, but also with exchanges like those in (4):

(3) A: Haben wir *kein* Eis im Gefrierschrank?
have we no ice-cream in-the freezer
‘Do we not have ice cream in the freezer?’

B: *DOCH*, (haben wir).
Yes, (we do).

(4) A: Andrea hat keine Kekse gegessen.
Andrea has no cookies eaten
Andrea hasn't eaten any cookies.

B: Sie hat *doch* fünf gegessen!
she has *doch* five eaten
She (clearly) ate five!

It’s clear that in both cases, the *doch* statement, *p*, seems to be directly contradicting some salient *q*.

3The polarity particle is distinct from the MP *doch* in a variety of ways, not limited to but including a) its ability to occur sentence-initially, a position disallowed in MP instantiations of *doch*; b) obligatory utterance-level stress; c) cannot be uttered without an overt linguistic antecedent

But in a discourse like that in (5), it’s difficult to see where CONTRADICTION might come in, and why NORMATIVITY has been proposed as a core meaning of the MP:

NORMATIVITY roughly indicates that the speaker, addressee or third party *should have known* *p*.

Hans and Hanna are at a natural history museum. Hanna points to a stuffed sabertooth tiger and asks Hans what it is. He responds:

(5) Hans: Das ist *doch* ein Säbelzahntiger!
that is *doch* a saber-tooth-tiger
‘That’s (clearly) a saber-tooth tiger.’

There is no contradiction to a salient *q* here.

- *DOCH* responds to the fact that Hans is surprised that Hanna didn’t know *p*, the content of which is the *doch* utterance.

But, in particular contexts, NORMATIVITY can also go away. Particularly, in out-of-the-blue *doch* utterances:

Hans and Hanna are talking on a street corner. Hans’ back is to the street, and as Hanna talks, she observes a man open an upper story window in the building across the street and begin to climb out. Hanna can then utter to Hans:

(6) Hanna: Er *springt* *doch* gleich runter!
he jumps *doch* shortly down
‘He's going to jump (and you should turn around and look)’!

There is no sense in which the speaker, addressee, or third party *should have known* the information in the *doch* utterance.

And it’s also clear that there is nothing to CONTRADICT.

- Rescue attempt? The *doch* utterance contradicts the notion that we have that people don’t typically jump out of windows.

But perhaps this is not contradiction, but rather, low probability.

(7) $P(r \mid s)$ is low, but not necessarily 0
Grosz (2014) gives us a reason to favor pure contradiction over low probability:

(8) Slightly modified from Grosz, 2014:

“So gut wie jeder Atheist ist liberal and Vegetarier. Hans ist die as good as every atheist is liberal and vegetarian. Hans is the Ausnahme. Er ist nicht liberal. Er ist nicht Vegetarier.”

Exception he is not liberal he is not vegetarian

“Just about every atheist is liberal and vegetarian. Hans is the exception. He isn’t liberal. He isn’t vegetarian.”

Grosz argues that the reason that (8a) is bad hinges on the fact that it asserts a set of facts that are typically the case, and then asserts an apparent contradictory proposition containing doch.

If we are to believe the generalization in (7), this should permit (8a).

BUT there is a confound. (8a) is not bad due to lack of CONTRADICTION

→ (8a) is bad without doch.

WHY? For the same reason as in English.

We don’t make generalizations and then counterexemplify without a contrast marker

The oddness is in the discourse relation. If you add aber, as in (8b), the oddness goes away

2.2 Another rescue attempt

A recent proposal by Rojas Esponda (2013) suggests that the interpretation of the unstressed doch and the stressed MP DOCH depends on the answer to a reintroduced and previously closed QUD.

Particularly:

Unstressed doch provides the same answer to a re-raised QUD

Stressed DOCH re-answers a previously closed QUD in a different way than before

The following trio of answers to the question of whether Anke is joining Birgit for the opera shows this (modified from Rojas-Esponda, 2013):

(9) Anke: Kommt du mit in die Oper?

Are you joining us for the opera?


No, I have doch declined

b. Birgit: Ja, ich habe doch zugesagt.

Yes, I have doch confirmed

c. Birgit: Ja, ich kann doch mitkommen.

Yes, (it turns out) I CAN come.

With these answers, it is very clear that there was a previous resolution to the QUD of whether Birgit was coming to the opera.

But consider (10):

Hans and Hanna want to make plans to go to the opera, but it is conditional on whether Hanna finishes her essay. She tells Hans that she will know if she can go by 5:00. Hans then calls her at 5:00 and asks:

(10) Hans: Are you joining us for the opera?

a. Hanna: Ja, ich habe doch mein Aufsatz zu Ende geschrieben!

Yes I have doch my essay to end written

“Yes, I was able to finish my essay!”


No I have my essay doch not to end written

“No, I wasn’t able to finish my essay.”

Here, the QUD has been backgrounded and reactivated, but what cannot be reactivated is a previous and identical answer to the QUD
Crucially, it has not yet been answered. Additionally, we must ask what happens in non-Question-Answer pairs.

*Do*ch statements can be discourse-initial:

*You are sitting in the grass talking to a friend. You look down, see something and utter:

(11) Das ist *do*ch ein vierblättriges Kleeblatt!
that is *do*ch a four-leaf clover
'It’s a four-leaf clover!'

It is clear that discourse-initial *do*ch can activate a current QUD and the addressee can accommodate it. But can they accommodate a previous answer? Depending on the specifics of the theory, this may not be a problem at all.

**BUT**: How does this analysis fare in light of the facts surrounding imperatives, exclamatives and interrogatives?

For declarative statements, it is quite clear a QUD analysis can very nicely capture much of the data. But data like (10) and (11) do raise red flags.

### 3 Toward an analysis

There is a commonality that is present throughout:

**Expectation Violation or Surprise**

- Super Bowl: surprised that to think they would care
- Snowing: Flowers in the middle of the snow violate expectations
- Natural History Museum: surprised that the answer wasn't known
  
  This looks like it tracks with mirative elements.

Mirativity has been proposed to be another grammatical category that encodes a speaker's surprise or unpreparedness of mind.

Mirative meanings reflect “the status of the proposition with respect to the speaker's overall knowledge structure” (DeLancy, 1997).

Evidence from a multitude of languages\(^4\) suggest that mirativity is distinct from evidentiality

Further, the range of values for these mirative meanings can mark

- sudden discovery
- surprise
- unprepared mind
- counterexpectation
- new information (Aikhenvald, 2004)

All of which can reference the speaker, the addressee, or a third party

*This fits with the remaining core meanings of *do*ch: Expectation Violation.*

#### 3.1 Can *do*ch be a marker of mirativity?

If *do*ch is to indicate mirativity, we must answer the questions of *whose* expectations can be violated.

- **Speaker**

(12) *You are sitting in the grass talking to someone. You look down, see something and utter:*

  Das ist *do*ch ein vierblättriges Kleeblatt!
  that is *do*ch a four-leaf clover
  'It’s a four-leaf clover!'

With this, you express surprise at finding the clover, given the very low probability of this occurrence.

- **Addressee**

(13) *You have invited a friend over for coffee. You bring out the mugs, and as you set your friend’s down, utter:*

  Du nimmst *do*ch Zucker in deinem Kaffee. Es tut mir Leid.
  you take *do*ch sugar in your coffee it does me harm
  ‘You take sugar in your coffee. I’m sorry (but we don’t have any).’

---

\(^4\)Including Cantonese, Korean, Turkish, Chechen, Galo, Lisu, Wichita, and Magar, among others.
With this, you indicate your conversational partner’s violated expectations that there will be sugar for her coffee.

✓ Third Party

(14) You and a friend are talking about Hans’ recent attempt to propose to Hanna, which both of you know wouldn’t go well. You say:

Er, hat sie geboten, ihn zu heiraten, aber sie hat doch, nein gesagt. 
he has her asked, him to marry but she has doch no said
‘He asked her to marry him, but she said no.’

With this, and with your combined knowledge that Hanna would say no, you show that Hans is the person whose violated expectations are referenced by doch.

3.2 A proposal


(15) a. We assume that an utterance $u$ containing doch has a logical form of the form $[\ldots \text{doch}_{q,x,\ldots}]$, where:

i. $q$ is anaphoric to a proposition in the context $C$, and
ii. $x$ is anaphoric to a salient doxastic center in $C$, which may be the speaker, the addressee, or a salient third party protagonist

Such a $u$ is expressively correct in context $C$ iff:

i. there is a contextual degree of probability $d_C$ s.t.: $\text{EXPECTATION}_{x,C}(q) < d_C$
ii. $R(q,u)$, where $R$ is defined below.

b. Let $R(q,u)$ hold between a proposition $q$ and an utterance $u$ in a context $C$ iff one of the following is true:

i. $q$ is the semantic content of $u$
ii. $q$ is the fact that $u$ occurred
iii. $q$ provides an explanation for why $u$ occurred
iv. $q$ provides an explanation for why $x$’s expectations have been violated

Crucial observation:

➤ There are two degrees of freedom here that vary:

- $x$ can indicate experiencer$^5$, which can be the speaker, addressee, third party
- $p$ can be the preajacent, or another salient proposition $q$

With such a formulation, we can also constrain the referent of $q$, which, as in cases like (2) and in (16) below:

you take doch sugar in your coffee it does me harm
‘You take sugar in your coffee. I’m sorry (but we don’t have any).’

Without both of these degrees of freedom, (16) the addition of doch would seem completely unnecessary:

➤ It’s not the case that the speaker is surprised by the doch utterance, but rather, by the fact that there is a salient $q = \text{there isn’t any sugar}$.

(17) $\text{doch}(q, x)_u = q$ is surprising to $x$ because of $u$

a. $q = \text{Your coffee is unsweetened}$
b. $x = \text{Addressee (you)}$
c. $u = \text{You take sugar in your coffee}$
d. That your coffee is unsweetened is surprising to you because you take sugar in your coffee.

3.3 A Prediction

There is one situation in which most people agree that doch never appears: Polar Questions.

Under this new analysis, there is a simple reason for this.

- Polar questions ask $^7 p$

$^5$This is not meant to invoke anything theoretical, but rather, serves as an informal description of this variable
Under a question operator, one would be hard-pressed to indicate surprise/expectation violation of a proposition they are themselves questioning. This is something that other theories of doch also capture.

But loosening these restrictions then makes a prediction:

- Under the right conditions, a polar question can contain doch if the expectation that is being violated is not $p$, but rather, $q$.

And in fact, this prediction is borne out:

Hans and Hanna are in Hans’ office. They had both mentioned yesterday that they would be riding their bikes to work, and the signs that Hans has done just that are apparent: his bike is in the corner, his helmet and bike lock are on the table, and his biking gear is draped across his chair. The two of them are getting ready to leave, but Hans picks up his car keys, and heads toward the door. There’s no reason for Hanna to think that Hans has also driven his car today, as the signs are quite apparent that he has biked. She can then, surprised, ask:

\[
\text{(18) Hanna: } \text{Bist du doch heute mit dem Auto gefahren? 'Have you driven your car today, then?'}
\]

While the proposition $p$ is still seeking answer, namely, whether $p = \text{You drive your car today}$, what doch references is $q = \text{It looks like you rode your bike}$.

As it turns out, polar questions should be valid with doch, as long as there is another element $q$ to express surprise at.

**Upshot?** The analysis predicts that given the right environment, doch will be good in polar questions. And this is exactly what turns out to be true.

### 4 Conclusion

Previous analyses analyze doch as having at its core two components:

- **Normativity**
- **Contradiction**

I show that both of these elements turn out to be non-necessary.

- What they reduce to is **Expectation Violation**.

Additionally, I show that the violated expectation that doch carries does not have to work on the prejacent. Rather, it can reference another salient proposition in the discourse.

There are still some outstanding issues:

- Which dimension of meaning does doch target? Proffered information? Presupposed?
- What is the discourse relation? Can a QUD work here?

**OVERALL,** this account is able to not only simplify the account of doch from previous analyses, but also fits this modal particle into the grammatical category of miratives, a previously unnoticed fact about this element.

- Generalizes the core meaning to mere expectation violation, enlarging the domain of use.

### References


Appendix A: Various uses of doch

Declaratives

(19) Anke: Wie alt ist dein Hund?
       How old is your dog?

       Birgit: Wir haben doch keinen Hund.
       we have doch no dog
       ‘We (clearly) don’t have a dog!’

(20) Du kannst doch nicht ohne Training einen Marathon laufen.
       you can doch not without training a marathon run
       ‘(Oh please), you can’t run a marathon without training.’ (Schuchart, 2012)

Out-of-the-blue cases of doch

(21) You are sitting in the grass talking to a friend. You look down, see something and utter:

       Das ist doch ein vierblättriges Kleeblatt!
       that is doch a four-leaf clover
       ‘It’s a four-leaf clover!’

(22) You and a friend are walking in the woods on a winter day and although it’s cold and snowing, you encounter a flower blooming. You indicate the flower and utter:

       (Aber) Es schneit doch!
       but it snow doch
       ‘(But) It’s snowing!’

(23) Hans and Hanna are at a masquerade ball. Hans recognizes Hanna’s silver earrings through her disguise, and triumphantly utters:

       Hans: Du bist doch Hanna!
       you are doch Hanna
       ‘You’re (clearly) Hanna!’

Imperatives

(24) A mother and her young child are walking in a parking lot. Normally, she allows her child to walk without holding her hand, but this afternoon, the parking lot is very busy, and she is worried about her child’s safety. She utters:

       Nimm doch meine Hand.
       take doch my hand
       ‘Just hold my hand.

(25) Wir gehen ein Bier trinken. Komm doch mit!
       we go a beer drink come doch with
       ‘We are going to have a beer. Come join us, if you’d like!’

Questions

(26) Hans and Hanna are at a party. All of the sudden, Hans’ face turns white, and he turns and quickly walks out of the room. Hanna has seen this happen and utters:

       Hanna: Was ist doch passiert?
       what is doch happened
       ‘What happened?’

(27) Du hast doch den Artikel gelesen...?
       you have doch the article read
       ‘You did read the article, didn’t you?’
Wie bemerkte Goethe so aptly?

‘What was it again that Goethe said so aptly?’

‘Have you driven your car today, then?’

Hans and Hanna are in Hans’ office. They had both mentioned yesterday that they would be riding their bikes to work, and the signs that Hans has done just that are apparent: his bike is in the corner, his helmet and bike lock are on the table, and his biking gear is draped across his chair. The two of them are getting ready to leave, but Hans picks up his car keys, and heads toward the door. There’s no reason for Hanna to think that Hans has also driven his car today, as the signs are quite apparent that he has biked. She can then, surprised, ask:

Hanna: Bist du heute mit dem Auto gefahren?

‘Have you driven your car today then?’

A five year old comes home from Kindergarten with a painting in her hand, and proudly presents it to her father. The painting is an obvious improvement, and showcases the child’s developing motor skills very nicely. Her father exclaims:

Das ist doch so schön!

‘That is just so pretty!’

Exclamatives

A table summarizing the discourse relations of ‘doch’

<table>
<thead>
<tr>
<th></th>
<th>$q$</th>
<th>$x$</th>
<th>$u$</th>
<th>Discourse Connective</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>It is a four-leaf clover</td>
<td>Speaker</td>
<td>It is a four-leaf clover</td>
<td>$q = u$, and $u$ is surprising to $x$</td>
</tr>
<tr>
<td>23</td>
<td>Hans knows that she is Hanna</td>
<td>Addressee</td>
<td>You are Hanna</td>
<td>$q$ is surprising to $x$ at the fact that $u$ occurred</td>
</tr>
<tr>
<td>24</td>
<td>Mother tells child to hold her hand</td>
<td>Addressee</td>
<td>Give me your hand</td>
<td>$q$ is surprising to $x$ at the fact that $u$ occurred</td>
</tr>
<tr>
<td>??</td>
<td>Your coffee is unsweetened</td>
<td>Addressee</td>
<td>You take sugar in your coffee</td>
<td>$q$ is surprising to $x$ because of $u$</td>
</tr>
<tr>
<td>2</td>
<td>A flower is blooming</td>
<td>Speaker</td>
<td>It’s snowing</td>
<td>$q$ is surprising to $x$ because of $u$</td>
</tr>
<tr>
<td>26</td>
<td>Hans suddenly left the room</td>
<td>Speaker</td>
<td>What happened?</td>
<td>$q$ is surprising to $x$, explains why $u$</td>
</tr>
<tr>
<td>29</td>
<td>You are leaving your bike</td>
<td>Speaker</td>
<td>Are you driving your car?</td>
<td>$q$ is surprising to $x$, explains why $u$</td>
</tr>
</tbody>
</table>

Table 1: Summary of the discourse relations of ‘doch’