"Eigentlich" again *

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Abstract

Experimental data on the interpretation of the German adverb "eigentlich" are presented. The formal account of Schmitz and Schröder (2004) to the explanation of these data is discussed and substantially modified. We arrive at an improved account that makes use of the integration of pragmatic operations of meaning enrichment into compositional semantics.

1 "Eigentlich": some observations

The German word "eigentlich" can be used as an adverb, an adjective or a discourse particle. The adverb, the adjective and the particle are etymologically and semantically related. Here, I focus on the adverb, in particular the sentence-modifying adverb. Sentences with the adverb modifying non-sentential expressions, like (1-a), can be paraphrased by sentences in which the adverb modifies a sentence, like (1-b). Moreover, sentences in which the adjective is used as an attribute, like (1-c), can be paraphrased by sentences in which "eigentlich' only occurs as an adverb, like (1-d). The predicative use of the adjective is very unusual. Example (1-e) seems to be impossible in ordinary German. I found only one occurrence of a predicative "eigentlich", at the beginning of Adorno's *Jargon der Eigentlichkeit* (example (1-f)).

(1) a. Dies ist ein eigentlich schwieriges Problem.
(This is an actually difficult problem.)
b. Dies ist ein Problem, das eigentlich schwierig ist.
(This is a problem which actually is difficult.)
c. Dies ist das eigentliche Problem. *(This is the real problem.)*
d. Dies ist eigentlich das Problem. *(Actually, this is the problem.)*
e. ?? Dieses Problem ist eigentlich. *(This problem is eigentlich.)*

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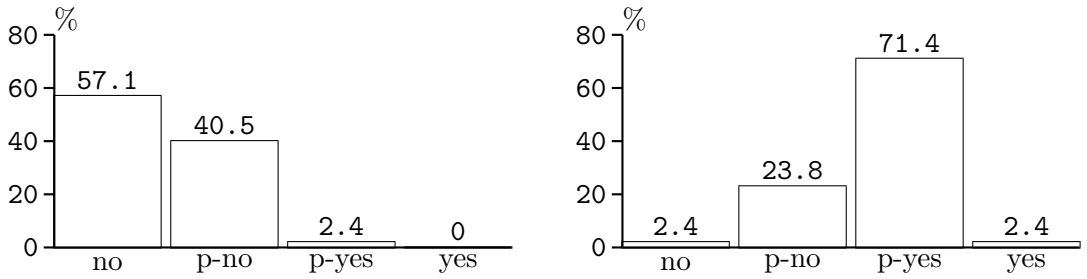


(a) I have to finish my paper. (b) Eigentlich, I have to finish my paper.

Figure 1: Experiment: interpretation of example (2)

f. "Ein Freund, den die Sphäre damals anzog, wurde zu seinem leisen Verdruß nicht eingeladen. Er sei, so bedeutete man ihm, nicht eigentlich genug." *(... He was given to understand that he was not authentic (eigentlich) enough.)* (Adorno (1964))

Although "eigentlich" is used frequently and speakers of German seem to naturally understand it, there is disagreement on its meaning. Some linguists claim that it marks the most relevant, very important and essential (e.g. Weydt and Hentschel (1983)); others state that it marks the not so relevant and less important (e.g. Kohrt (1988)). The adverb "eigentlich" is best translated as "actually". Note, that this translation is only an approximation; my claims on the meaning of "eigentlich" are not claims on the meanings of translations of "eigentlich".

Let us take a look at an example which I consider to be paradigmatic for the use of adverbial "eigentlich":[1]

(2) A: Kommst Du mit Essen? *(Shall we go out for lunch?)*

a. B: Ich muss meinen Artikel fertig schreiben.
(I have to finish my paper.)

b. B: Eigentlich muss ich meinen Artikel fertig schreiben.
(Eigentlich, I have to finish my paper.)

In an experiment, 42 test subjects – 26 native speakers and 16 non-native speakers of German[2] – were asked to interpret B's answers and choose one of the following options:

- B will not go out for lunch with A. (no)
- Presumably, B will not go out for lunch with A. (p-no)
- Presumably, B will go out for lunch with A. (p-yes)
- B will go out for lunch with A. (yes)

[1] An investigation of the Limas corpus and the Verbmobil corpus supports the view that this is a paradigmatic example. Cf. Schmitz and Schröder (2004).

[2] All test subjects of this and the other experiments described in this paper were first-year students in linguistics at the University of Bonn or the University of Frankfurt.

The results of the experiment are depicted in Figures 1(a) and 1(b). After perceiving answer (2-a) (without "eigentlich"), nearly all subjects expected that B will not go out for lunch or will presumably not go out for lunch with A (Figure 1(a)). This expectation can be explained along the following line: The subjects presupposed the default rule that, normally, if someone has to finish a paper then he will not go out for lunch. B says that he has to finish a paper. There is no evidence against the applicability of the default rule. The subjects therefore conclude that B will (presumably) not go out for lunch.

Answer (2-b) led to different expectations: more than 2/3 of the subjects expected that B presumably *will* join A for lunch (Figure 1(b)). The answers (2-a) and (2-b) led to different expectations regarding what B will do. Since the answers differ only in the occurrence of "eigentlich", the change of expectations must be an effect of "eigentlich".

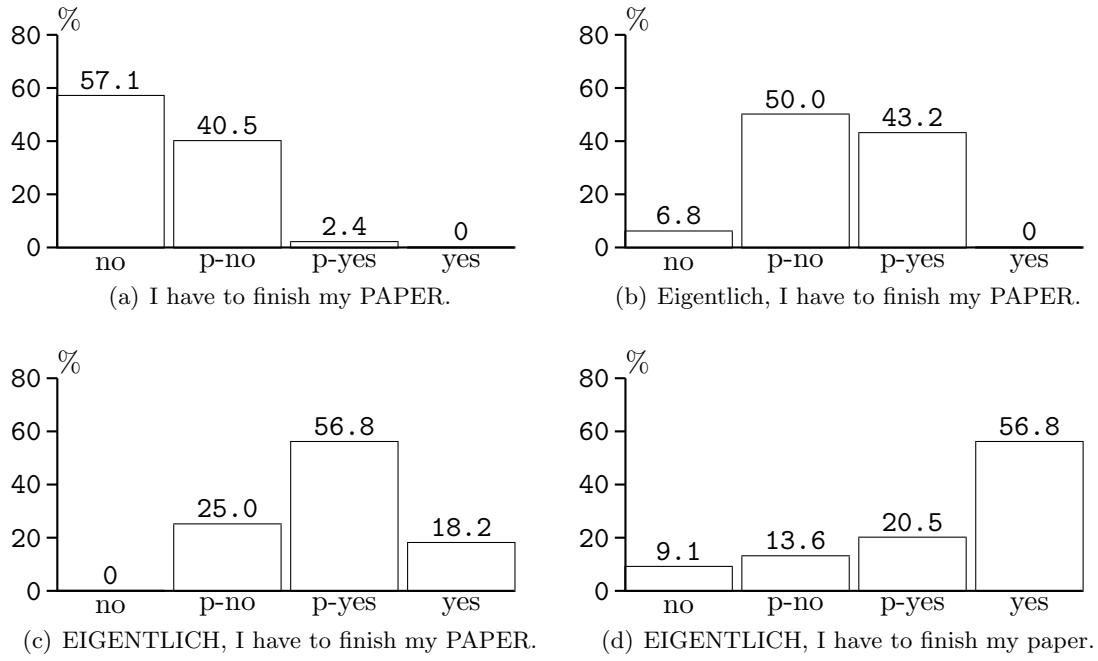
In example (2), B is not only asked to transfer information but also to commit himself to an action, namely to go out for lunch or not. Does that have an influence on the test subjects' interpretations? – I repeated the experiment with example (3) and 39 subjects, all of them native speakers of German:

(3) A: Kommt Thomas mit essen? *(Does Thomas join us for lunch?)*
   a. B: Er muss seinen Artikel fertig schreiben.
   (He has to finish his paper.)
   b. B: Eigentlich muss er seinen Artikel fertig schreiben.
   (Eigentlich, he has to finish his paper.)

After answer (3-a) (without "eigentlich"), 97.4% of the subjects expected that Thomas will (presumably) not go out for lunch. After answer (3-b) (with "eigentlich"), 66.7% of the subjects expected that he will presumably go out for lunch. 10.2% even expected that he will in fact – not only presumably – go. The results are nearly the same as in the first experiment

Are the subjects' expectations somehow affected by the answer's stress pattern? – I repeated the experiment again, this time with example (4) and 44 subjects (all of them native speakers of German). The results are depicted in Figures 2(b)-2(d) (Figure 2(a) is identical to Figure 1(a)). As can be seen, the expectation that B will join A for lunch is correlated with the relative prosodic prominence of "eigentlich".

(4) A: Kommst Du mit essen? *(Shall we go out for lunch?)*
   a. B: Eigentlich muss ich meinen ARTIKEL fertig schreiben.
   (Eigentlich, I have to finish my PAPER.)
   b. B: EIGENTLICH muss ich meinen ARTIKEL fertig schreiben.
   (EIGENTLICH, I have to finish my PAPER.)
   c. B: EIGENTLICH muss ich meinen Artikel fertig schreiben.
   (EIGENTLICH, I have to finish my paper.)



(a) I have to finish my PAPER.

(b) Eigentlich, I have to finish my PAPER.

(c) EIGENTLICH, I have to finish my PAPER.

(d) EIGENTLICH, I have to finish my paper.

Figure 2: Experiment: interpretation of example (4)

2 "Eigentlich" as a default blocker

In Schmitz and Schröder (2004), Bernhard Schröder and I explained the effect of "eigentlich" on the expectations of the test subjects by making use of Frank Veltman's framework of Defaults in Update Semantics (Veltman (1996)): Let a rather naive information state $0[p \rightsquigarrow \neg q]$ be given which only entails the default rule that if p then normally not q – e.g., if someone has to finish a paper, then normally he will not go out for lunch. An update with p – B has to finish a paper – does not affect the knowledge of this default rule. The updated information state therefore entails p and $p \rightsquigarrow \neg q$. Moreover, the information state entails the default conclusion that presumably not q – e.g., that presumably B will not go out for lunch. Thus, Veltman's framework can be used to explain the interpretation of example (2-a) (the answer without "eigentlich").

$$0[p \rightsquigarrow \neg q][p] \models p \quad (1)$$

$$0[p \rightsquigarrow \neg q][p] \models p \rightsquigarrow \neg q \quad (2)$$

$$0[p \rightsquigarrow \neg q][p] \models \text{presumably } \neg q \quad (3)$$

Within Veltman's framework, we defined "eigentlich" as a default blocker: *Eigentlich* p has the same truth conditions but not the same update potential as p. An update with *eigentlich* p leads to the same modification of the factive knowledge represented by an information state as an update with p. Thus, an information state updated with *eigentlich* p entails p. Moreover, the update does not affect the knowledge of default rules. If the default rule $p \rightsquigarrow \neg q$ is entailed by an information state, then it is still entailed after an update with *eigentlich* p. However, "eigentlich" affects the applicability of default

rules. After an update with *eigentlich p*, *p*-defaults – i.e., default conclusions that could be drawn from *p* and the knowledge of default rules – are not entailed by the information state. This explains why the test subjects did not expect that B will (presumably) not go out for lunch after example (2-b) (the answer with "eigentlich").

$$0[p \rightsquigarrow \neg q][\text{eigentlich } p] \models p \quad (4)$$

$$0[p \rightsquigarrow \neg q][\text{eigentlich } p] \models p \rightsquigarrow \neg q \quad (5)$$

$$0[p \rightsquigarrow \neg q][\text{eigentlich } p] \not\models \text{presumably } \neg q \quad (6)$$

This is not the whole story. After the eigentlich-answer, the test subjects have not just been undecided about B going out for lunch or not. The majority expected that B presumably *will* join A. How can that be explained? – By answering that he *eigentlich* has to finish his paper, B blocks the conclusion that he will presumably *not* go out for lunch and by which he would give a vague answer to A's question. Thus, he does not answer the question under discussion. He must have a reason for blocking the conclusion and not giving an answer. The best reason for blocking the conclusion is that it is false. Presumably, there is some fact which contradicts the default conclusion and which is as relevant for B's decision as the fact that he has to finish his paper. The recipient A (or, in the experiment, the test subjects) can expect that the competing fact is named in a subsequent sentence. Such a sentence is usually introduced with "aber" (*"but"*) and thereby marked as more relevant for the decision (cf. Winter and Rimon (1994)):

(5) Eigentlich muss ich meinen Artikel fertig schreiben, aber ...
(Eigentlich, I have to finish my paper, but ...)

A therefore assumes that B presumably *will* go out for lunch with him. This assumption is a conversational implicature. The implicature can be cancelled; it is possible to continue the answer by stating that one will not go out for lunch:

(6) Eigentlich muss ich meinen Artikel fertig schreiben. Es tut mir leid, ich muss hier bleiben. *(Eigentlich, I have to finish my paper. Sorry, I have to stay here.)*

As we saw in section 1, the implicature is supported by a high prominence of "eigentlich". The implicature can be cancelled more easily – and therefore example (6) sounds better – if "eigentlich" is not stressed.

The account of Schmitz and Schröder (2004) was tested with the occurrences of "eigentlich" in the LIMAS-corpus and the Verbmobil-corpus. It passed the test without a problem. Nevertheless, the account has some drawbacks. Before I come to the discussion of these drawbacks and the modification of the account, I have to make a short excursus.

3 Excursus: meaning enrichment in semantics

In natural language communication, recipients can perform operations of meaning enrichment. A cooperative speaker wants to be understood. He must anticipate possible meaning enrichments which might be carried out by the recipient. A recipient wants to understand the speaker. He can only carry out meaning enrichments that can be anticipated or even be intended by the speaker. It must be clear in advance which meaning enrichment operations can be performed; the set of enrichment operations is restricted. We can take these operations into account when we construct meaning representations for utterances.

(7) A: Wie spät ist es? *(What time is it?)*
B: Es ist 5 nach 3, meine Uhr geht aber 5 Minuten vor.
(It's 5 past 3, but my watch is 5 minutes fast.)

Let us take a look at example (7): 42 test subjects – 26 native speakers of German and 16 non-native speakers of German – were asked to interpret B's answer and to write down what time it is according to the answer. The clear majority of 85.7% assumed that it was 15:00h which is not the literal meaning of B's answer. Only six subjects (14.3%, all of them native German speakers) interpreted the answer literally. I asked the subjects how they arrived at the non-literal interpretation. The explained that they interpreted the answer in the sense of "By my watch it's 5 past 3, but my watch is 5 minutes fast" which entails that it's (exactly) 3 o'clock. I did not invent the example. When I first heard it, I asked the speaker what he meant. He answered that he meant that it was (exactly) 3 o'clock. Thus, the test subjects interpreted the answer correctly.

Further experiments showed that the non-literal interpretation is not dependent on the occurrence of "aber" (*but*); "aber" can be substituted with "und" (*and*) or be left out without a significant change of the results. (Cf. example (12) in section 4.3.)

The subjects identified an NP that denotes a potential information source – the speaker's watch – in the second conjunct of the answer. They transformed the semantic representation of the NP into a modal operator (*by the speaker's watch*). Finally, they applied this operator to the semantic representation of the first conjunct of the answer sentence. The specification of this enrichment operation can be integrated into an extended meaning representation of the answer sentence. In formula 7, an abridged feature structure is used to describe the meaning of the first conjunct of B's answer in example (7). For reasons of readability, the structure includes lambda-expressions. However, it can be easily transformed into a proper HPSG-like feature structure without lambda-expressions. The value of the NORMAL-feature is a representation of the literal meaning of "It's 5 past 3". By the ENRichment-feature possible meaning enrichment operations are specified. Here, only the operation of modal enrichment with the OP-operators is named. Since modal enrichment is not declared to be obligatory, the meaning representation is underspecified. By a function ϕ, we can compute the set of fully specified possible meaning representations of "It's 5 past 3".

$$\{\ \lambda w[\text{it's-5-past-3}](w), \lambda w[\text{by-watch}(\lambda w'[\text{it's-5-past-3}(w')])(w)]\ \} \subseteq$$
$$\phi\left(\begin{bmatrix}\text{NORMAL} & \lambda w[\text{it's-5-past-3}(w)] \\ \text{ENR} & \begin{bmatrix}\text{MODAL} & \begin{bmatrix}\text{OP} & \left\langle \lambda Q \lambda w[\text{by-watch}(Q)(w)],\ ... \right\rangle\end{bmatrix}\end{bmatrix}\end{bmatrix}\right) \quad (7)$$

It might be that in a given situation an operation of meaning enrichment is not obligatory but only optional for the recipient. In such a situation, a speaker cannot be sure whether the recipient will perform this operation or not; and the recipient cannot be sure whether he should perform it or not. In order to assure that he is properly understood, the speaker must control which operations of meaning enrichment are performed by the recipient. I claim that some expressions serve the purpose of controlling meaning enrichment. In German, one of these expressions is the word "tatsächlich" (*in fact*).

(8) A: Wie spät ist es? *(What time is it?)*
B: Tatsächlich ist 5 nach 3, meine Uhr geht aber 5 Minuten vor.
(In fact, it's 5 past 3, but my watch is 5 minutes fast.)

The 42 subjects who were already asked to interpret the answer of example (7) (without "tatsächlich") were also asked to interpret the answer of example (8) (with "tatsächlich"). This time, 95.2% interpreted the answer literally as meaning that it is 15:05h. Only two subjects (4.8%, both non-native speakers of German) performed an operation of modal enrichment and understood that it was 15:00h. There is a clear correlation of the interpretations and the occurrence of "tatsächlich"; the one-sided t-test yielded a p-value of $3.954 \cdot 10^{-15}$.

"Tatsächlich" does not change the literal meaning of B's answer – "Es ist 5 nach 3" (*It's 5 past 3*) and "Tatsächlich ist es 5 nach 3" (*In fact, it's 5 past 3*) have, literally interpreted, the same truth conditions. However, "tatsächlich" evidently blocks the creation of a modal interpretation context. That is, it influences the applicability of an enrichment operation. This role can be easily specified by the addition of an APPLication-feature to the feature structure proposed above:

$$\lambda w[\text{it's-5-past-3}](w) \in$$
$$\lambda w[\text{by-watch}(\lambda w'[\text{it's-5-past-3}(w')])(w)] \notin$$
$$\phi\left(\begin{bmatrix}\text{NORMAL} & \lambda w[\text{it's-5-past-3}(w)] \\ \text{ENR} & \begin{bmatrix}\text{MODAL} & \begin{bmatrix}\text{OP} & \left\langle \lambda Q \lambda w[\text{by-watch}(Q)(w)],\ ... \right\rangle \\ \text{APPL} & \text{blocked}\end{bmatrix}\end{bmatrix}\end{bmatrix}\right) \quad (8)$$

Let me take stock: meaning enrichment operations must be conventionalised, they can be specified within extended meaning representations, and there are expressions which

are used to control meaning enrichments, i.e. there are expressions which refer to the applicability of conventionalised meaning enrichment operations.[3]

Let us come back to "eigentlich".

4 "Eigentlich" as an enrichment blocker

4.1 Blocking modal strengthening of default conclusions

After interpreting example (2-a) – B's answer without "eigentlich" – 40.5% of the test subjects expected that B will *presumably* not go out for lunch (p-no) and 57.1% of the subjects expected that B will *(in fact)* not go out for lunch (no). The data reveal that nearly all subjects have a negative expectation of B's going out for lunch. It might be that the subjects chose between the negative expectations *no* or *p-no* by chance. Therefore, the data do not justify a hypothesis according to which the subjects followed different interpretation strategies which led to the different expectations that B will *presumably* not go or that B will *in fact* not go. Let us nevertheless tentatively explore the idea that the subjects followed different interpretation strategies and see where it leads us: all subjects with a negative expectation drew the default conclusion that B will presumably not go out for lunch (*presumably* $\neg q$). More than half of these subjects also performed an operation of meaning enrichment by transforming this conclusion from *presumably* $\neg q$ to $\neg q$. I call this operation *modal strengthening of a default conclusion* (MSDC). It can be defined as follows:

Definition 1 *Be σ an information state and be ϕ a proposition. Modal strengthening of a default conclusion (MSDC) is performed after an update of σ with ϕ iff $\sigma[\phi]$ is updated with some proposition ψ for which it holds that (i) $\sigma \not\models$ presumably ψ, (ii) $\sigma[\phi] \models$ presumably ψ, and (iii) $\sigma[\phi] \not\models \psi$.*[4]

It is now possible to define "eigentlich" similar to "tatsächlich" as an enrichment blocker. "Eigentlich" does not block default conclusions but only their modal strengthening. This role can be specified by inserting an MSDC-feature into a feature structure of the kind introduced in section 3 and by assigning the APPLication-feature the value "blocked". Accordingly, the feature structure 9 is an abridged meaning representation of "Eigentlich muss ich meinen Artikel fertig schreiben" *(Eigentlich, I have to finish my paper)*:

$$\begin{bmatrix} \text{NORMAL} & \lambda w[\text{i-have-to-finish-my-paper}(w)] \\ \text{ENR} & \begin{bmatrix} \text{MSDC} & \begin{bmatrix} \text{APPL} & \text{blocked} \end{bmatrix} \end{bmatrix} \end{bmatrix} \tag{9}$$

So defined, "eigentlich" does not have an immediate semantic effect but only influences pragmatic interpretation behaviour:

[3] The entire experimental data on "tatsächlich" and modal enrichment and the proper definition of the feature structures will be published somewhere else.

[4] It was nicer if we did not have to rely on the syntactic structure of presumably ψ in order to extract ψ but had an inverse operator presumably^{-1} with presumably^{-1}(presumably ψ) $\equiv \psi$.

$$0[p \rightsquigarrow \neg q][p] \models p \quad (10)$$

$$0[p \rightsquigarrow \neg q][\text{eigentlich } p] \models p \quad (11)$$

$$0[p \rightsquigarrow \neg q][p] \models p \rightsquigarrow \neg q \quad (12)$$

$$0[p \rightsquigarrow \neg q][\text{eigentlich } p] \models p \rightsquigarrow \neg q \quad (13)$$

$$0[p \rightsquigarrow \neg q][p] \models \text{presumably } \neg q \quad (14)$$

$$0[p \rightsquigarrow \neg q][\text{eigentlich } p] \models \text{presumably } \neg q \quad (15)$$

$$0[p \rightsquigarrow \neg q][p] \Rightarrow^{prag} \neg q \quad (16)$$

$$0[p \rightsquigarrow \neg q][\text{eigentlich } p] \not\Rightarrow^{prag} \neg q \quad (17)$$

In example (2-b), B answers that he *eigentlich* has to finish his paper. If "eigentlich" only serves as an MSDC-blocker, then the test subjects could conclude that presumably B will not go out for lunch with A. However, the majority of subjects expected that B presumably *will* go out for lunch with A. How can this be explained? – Like in our old account (Schmitz and Schröder (2004)), the positive expectation is explained as a conversational implicature: B blocks the modal strengthening of the default conclusion that he will presumably not go out for lunch. Thus, he gives only a vague answer to A's question. There must be a reason for blocking the expectation that he will in fact not go out for lunch. The best reason for blocking this expectation is that it is false or at least not certain; it must still be possible that B *will* go out for lunch. Let us assume that B knows whether he will go out for lunch or not: according to his information state, it is possible that he will go only if he will go. Let us alternatively assume that B is not sure whether he will go out for lunch or not: he must have a reason for being unsure, i.e. there must be some competing fact which contradicts the strengthened default conclusion and which is as relevant for B's decision as the fact that he has to finish his paper. The recipient can expect that the competing fact is named in a subsequent sentence. Such a sentence is usually introduced with "aber" (*"but"*) and thereby marked as more relevant for the decision: "Eigentlich muss ich meinen Artikel fertig schreiben, aber ..." *(Eigentlich, I have to finish my paper, but ...)*. The recipient therefore assumes that B presumably will go out for lunch with him.

In the scenario used here, "Eigentlich, I have to finish my paper" entails "Presumably, I will not go out for lunch". The conversational implicature is not generated when B answers with the presumably-sentence instead of the eigentlich-sentence. Why not? – If, on the one hand, a cooperative speaker says that he will presumably not go out for lunch, then, according to his information state, he will presumably not go out for lunch. He cannot have a striking reason *for* going. If, on the other hand, a cooperative speaker says that (eigentlich) he has to finish his paper, then *the recipient* might assume that presumably the speaker will not go out for lunch. It need not be the case that also the speaker makes this assumption; he might still have a good reason for going.

Let me take stock: In order to explain the effect of "eigentlich" observed in the experiments, we need not define "eigentlich" as a default blocker but we can also define it as an MSDC-blocker. This definition has some advantages which will be discussed in the next subsection.[5]

[5] "Eigentlich" can be focused and associated with an operator like "only" (cf. example (i)). How can

4.2 Three advantages of the new account

4.2.1 "Eigentlich ..., und ..."

Let an information state σ be given that entails only two default rules, namely $p \rightsquigarrow \neg q$ and $r \rightsquigarrow q$. If σ is updated with p, then it entails that *presumably* $\neg q$. If σ is updated with r, then it entails that *presumably* q. If σ is updated with (p and r) or (r and q), then no default applies. Per definitionem, the expectations entailed by an information state do not contradict each other; it is not possible that *presumably* $\neg q$ and *presumably* q are both entailed at the same time:

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][p \text{ and } r] \not\models \text{presumably } q \tag{18}$$

According to Winter and Rimon (1994), the situation changes when p and r are combined with "but" instead of "and". "But" is asymmetric; an update with (p but r) blocks defaults that otherwise could be drawn from the first conjunct while it licenses defaults that can be drawn from the second conjunct:

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][p \text{ but } r] \models \text{presumably } q \tag{19}$$
$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][r \text{ but } q] \models \text{presumably } \neg q \tag{20}$$

If we follow both Winter and Rimon (1994) and our old account (Schmitz and Schröder (2004)), then sentences of the form "Eigentlich ..., aber (*but*) ..." are redundant: the defaults of the first conjunct are blocked twice, first by "eigentlich" and secondly by "but". The redundancy can be eliminated by deleting "eigentlich" or by replacing "but" with "and":

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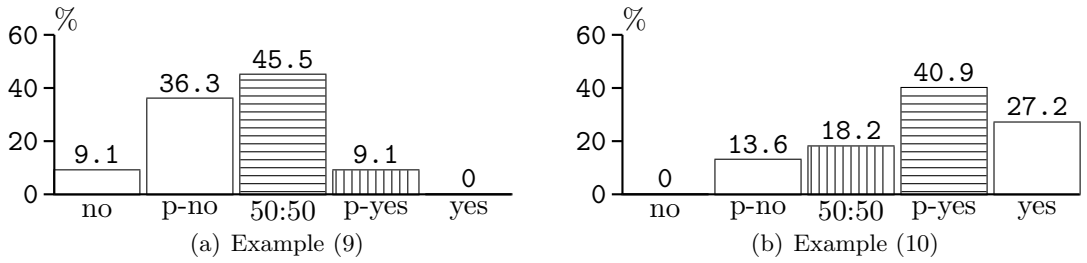
such an association with focus be interpreted when "eigentlich" is semantically empty and only fulfils a pragmatic role (as claimed by the new account)?

(i) Anne muss nur [EIGENTLICH]$_F$ ihren Artikel fertig schreiben.
(Ann has to finish her paper only eigentlich.)

Let us, for the sake of simplicity, assume that "eigentlich" has scope over "Ann has to finish her paper" and "only" has scope over "[eigentlich]$_F$, Ann has to finish her paper". The meaning of example (i) has two components which can be paraphrased as follows: (a) Ann has to finish her paper; modal strengthening of default conclusions that can be drawn from this fact is blocked. (b) No alternative operator of *eigentlich* can be applied to the representation of "Ann has to finish her paper" without making it false. Let one such operator be λP[all default conclusions of P are true]: "all default conclusions of the fact that Ann has to finish her paper are true" is false. The punch line of this explanation is that *eigentlich* can be semantically empty as long as alternatives of *eigentlich* are not. It also provides us with an explanation why example (ii-a) is odd – "eigentlich" can be deleted without changing the meaning – while (ii-b) sounds fine – it is not the case that no alternative operator of *eigentlich* can be applied to the representation of "Ann has to finish her paper" without making it false.

(ii) a. # Anne muss nicht eigentlich ihren Artikel fertig schreiben.
(Ann does not eigentlich have to finish her paper.)
b. Anne muss nicht nur [EIGENTLICH]$_F$ ihren Artikel fertig schreiben.
(Anne does not have to finish er paper only eigentlich.)



(a) Example (9) (b) Example (10)

Figure 3: Experiment: interpretations of examples (9) and (10)

$$(\text{eigentlich } p) \text{ but } r \;\equiv\; p \text{ but } r \;\equiv\; (\text{eigentlich } p) \text{ and } r \tag{21}$$

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][\text{eigentlich } p \text{ and } r] \models \text{presumably } q \tag{22}$$

As long Winter's and Rimon's analysis of "but" is accepted, we predict with the old account that the answer of example (9) leads to the positive expectation that Ann will presumably go out for lunch.

(9) Anne, kommst Du mit essen? *(Ann, shall we go out for lunch?)* — Eigentlich muss ich meinen Artikel fertig schreiben, und ich habe großen Hunger. *(Eigentlich, I have to finish my paper and I am really hungry.)*

With the new account, a different prediction is made. "Eigentlich" does not block the contextually relevant default conclusion of the first conjunct. Thus, there are two potential default conclusions that contradict each other: (a) Ann will presumably *not go* out for lunch because she has to finish her paper vs. (b) Ann will presumably *go* out for lunch because she is really hungry. As a result, none of these defaults applies. A recipient should not have any expectation about Ann going out for lunch or not; Ann's answer is therefore uninformative. (This might be the reason why the answer sounds odd.)

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][\text{eigentlich } p \text{ and } r] \;\not\models\; \text{presumably } q \tag{23}$$

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][\text{eigentlich } p \text{ and } r] \;\not\models\; \text{presumably } \neg q \tag{24}$$

I performed an experiment to evaluate the competing predictions: 22 subjects (all of them native German speakers) were asked to interpret Ann's answer and to name their expectation whether she will go out for lunch or not. The results are depicted in Figure 3(a): only 2 subjects (9.1%) had the expectation predicted by the old account. The relative majority of 10 subjects (45.4%) had no expectation, as was predicted by the new account. In experiments like the ones described here, the test subjects' expectations can be vague. We must take into consideration that there is some variation: although they are undecided, some subjects might choose the more pessimistic option that Ann will presumably not go out for lunch (p-no) or the more optimistic option that Ann will presumably go (p-yes). In view of such variation, the results of the experiment clearly corroborate the prediction of the new account.

4.2.2 " ..., aber eigentlich ..."

(10) Anne, kommst Du mit essen? *(Ann, shall we go out for lunch?)* — Ich muss meinen Artikel fertig schreiben, aber eigentlich habe ich großen Hunger. *(I have to finish my paper, but eigentlich I am really hungry.)*

In example (10), the default conclusion that could be drawn from the first conjunct of Ann's answer is blocked by the use of "but". According to our old account, the default conclusion of the second conjunct is blocked as well, this time by "eigentlich". Therefore, no default applies:

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][p \text{ but eigentlich } r] \not\models \text{presumably } q \quad (25)$$

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][p \text{ but eigentlich } r] \not\models \text{presumably } \neg q \quad (26)$$

According to the new account, the default conclusion of the first conjunct is blocked by "but". The default conclusion of the second conjunct is not blocked. It can be drawn but it cannot be strengthened:

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][p \text{ but eigentlich } r] \models \text{presumably } q \quad (27)$$

$$0[p \rightsquigarrow \neg q][r \rightsquigarrow q][p \text{ but eigentlich } r] \not\Rightarrow^{prag} q \quad (28)$$

The two accounts make different predictions on expectations connected with Ann's answer of example (10). Again, I performed an experiment with 22 subjects – the same subjects as in the previous experiment – in order to test the competing predictions. The results are depicted in Figure 3(b): only 4 subjects (18.2%) had no expectation as predicted by the old account. The relative majority of 9 subjects (40.9%) had the weak positive expectation that Ann will presumably go out for lunch. This was predicted by the new account. If we take variation into consideration, then the results clearly corroborate the prediction of the new account.

4.2.3 Context-dependency

(11) Helmut Eisele ist eigentlich Mathematiker. Er arbeitet als Koch.
(Helmut Eisele is eigentlich a mathematician. He is working as a cook.)

According to Schmitz and Schröder (2004), default blocking is not context-dependent. All default conclusions from the first sentence of example (11) are blocked. This is inadequate, because after interpreting the example one can still conclude that Helmut Eisele presumably has good mathematical knowledge etc. The only default which seems not to apply in the context of this particular example is that Eisele is *working* as a mathematician. (Cf. Weiand (2006).) According to the new account, no default conclusion but only the application of the enrichment operation MSDC is blocked. MSDC is only applied to contextually relevant conclusions. Therefore, the effect of "eigentlich" is correctly described as context-dependent.[6]

[6] The effect of "eigentlich" seems to be connected to the way in which eigentlich-sentences are stressed.

Let me take stock: The old account of Schmitz and Schröder (2004) faces problems regarding the context-dependency of "eigentlich"-sentences and the proper interpretation of "eigentlich ..., und ..."- and "..., aber eigentlich ..."-constructions. These problems are solved by the new account.

4.3 Problem: "eigentlich" as a more general enrichment blocker?

In some cases, the effect of "eigentlich" can be neither explained as a result of default-blocking nor as a result of MSDC-blocking. Consider the following example:

(12) A: Wie spät ist es? *(What time is it?)*

a. B: Es ist 10 nach 6. Meine Uhr geht übrigens 10 Minuten vor.
(It's 10 past 6. By the way, my watch is 10 minutes fast.)

b. B: Tatsächlich ist es 10 nach 6. Meine Uhr ...
(In fact (tatsächlich), it's 10 past 6. By the way, my watch ...)

c. B: Eigentlich ist es 10 nach 6. Meine Uhr ...
(Eigentlich, it's 10 past 6. By the way, my watch ...)

I asked 43 test subjects (only native speakers of German) to interpret the answers (12-a)-(12-c) and to write down what time it is according to the answers. The interpretations of (12-a) and (12-b) confirm the results of the experiments described in section 3: 74.4% of the subjects interpreted the first answer without "tatsächlich" or "eigentlich" non-literally as meaning that is 18:00h. They performed an operation of modal enrichment and understood that it is 10 past 6 *by the speaker's watch*. Contrary, 90.7% of the subjects interpreted the second answer with "tatsächlich" literally as meaning that it is 18:10h. As expected, "tatsächlich" blocks modal enrichment. Also the third answer with "eigentlich" was interpreted literally (by 88.4% of the subjects). It is not clear how this effect can be explained as a result of MSDC-blocking. It seems as if "eigentlich" also blocks other operations of meaning enrichment, e.g. modal enrichment.

We might tentatively claim that "eigentlich" can be used to block different, maybe even all operations of meaning enrichment. This hypothesis is attractive because it provides us with an explanation for the disagreement on the meaning of "eigentlich" (cf. section 1): "eigentlich" can both have a strengthening and a weakening effect. It has a

Does "eigentlich" denote a focus-operator? – Accents can serve several functions, e.g. to make an answer congruent with a preceding question. By accentuation, different context configurations, e.g. different questions under discussion, can be presupposed:

(i) a. Eigentlich muss [ICH]$_F$ meinen Artikel fertig schreiben.
((Who has to finish your paper?) Eigentlich, [I]$_F$ have to finish my paper.)

b. Eigentlich muss ich [MEINEN]$_F$ Artikel fertig schreiben.
((Which paper do you have to finish?) Eigentlich, I have to finish [MY]$_F$ paper.)

Due to the different accentuation patterns of the examples (i-a) and (i-b), different questions are presupposed. In answers to these questions, "eigentlich" blocks the strengthening of different default conclusions. What appears to be a focus-effect at first sight can be explained as an epiphenomenon of pragmatically motivated accentuation. We do not have to define "eigentlich" as a focus operator.

strengthening effect when it blocks an operation by which the meaning of an utterance would be weakend; and it has a weakening effect when if blocks an operation by which the meaning of an utterance would be strengthened.

Unfortunately, "eigentlich" does not block all kinds of meaning enrichment, not even all kinds of modal enrichment:

(13) Du hast doch mit Peter gesprochen. Wann kommt er?
(You have talked to Peter. When will he arrive?)
   a. Er kommt um 3 Uhr, er verspätet sich aber wie immer um eine Stunde.
   (He will arrive at 3 o'clock, but as always he will be one hour late.)
   b. Tatsächlich kommt er um 3 Uhr, er verspätet sich aber ..
   (In fact (tatsächlich), he will arrive at 3 o'clock, but as always ...)
   c. Eigentlich kommt er um 3 Uhr, er verspätet sich aber ...
   (Eigentlich, he will arrive at 3 o'clock, but as always...)

An experiment like the one that was performed with example (12) was also performed with example (13) and the same test subjects. I asked the subjects to interpret the answers (13-a)-(13-c) and to write down when Peter will arrive according to the answers. These are the results: More than 2/3 of the subjects (74.4%) interpreted the first answer, without "tatsächlich" or "eigentlich", non-literally. They performed an operation of modal enrichment and understood that *Peter said* that he would arrive at 3 o'clock. Since Peter is always one hour late, the subjects concluded that he will arrive at 4 o'clock. Modal enrichment is blocked by "tatächlich" in the second answer. Accordingly, the majority of subjects (79.1%) interpreted the answer literally and assumed that Peter will arrive at 3 o'clock. Contrary to what we might expect after the experiment with example (12-c), modal enrichment is not blocked but even forced by the use of "eigentlich" in (13-c): 95.3% of the subjects understood that *Peter said* that he will arrive at 3 o'clock and that therefore he will in fact arrive at 4 o'clock. So far, I am not sure how to explain this interpretation.

Let me take stock: Not all effects of "eigentlich" can be easily explained as results of MSDC-blocking. In some cases, "eigentlich" seems to block modal enrichment of sentences. However, contrary to "tatsächlich, "eigentlich" does not always block modal enrichment.

5 Conclusions

We can model "eigentlich" as being used for blocking the modal strengthening of default conclusions. By defining this pragmatic function, we can explain all phenomena that can be explained with the previous account of Schmitz and Schröder (2004). We can also eliminate drawbacks of the previous account. However, there are examples whose explanation is not straightforward. It seems as if the interpretation of "eigentlich" must be extended.

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