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Speaker commentary items

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Speaker commentary items

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1. Speaker commentary items¹

The present paper investigates expressions which convey speaker comments and are moreover characterized by the following common properties.

- i. The item is oriented to the speaker
- ii. When speakers change (e.g. in indirect speech), the item also shifts orientation
- iii. The item is banned from *if*-clauses, it can not be modally displaced
- iv. The item is acceptable in complement clauses of *verba dicendi*
- v. ... where it can also be quantified over

The expression *thank heavens* in English is such an item, and I will use it to illustrate the properties in (i) - (v). In (1), the speaker asserts that it is Saturday and comments relief about this fact.

(1) *Thank heavens it's Saturday.*

The examples in (2) show the use of *thank heavens* in indirect speech or thought. In each case, the relief is expressed and experienced by Daisy.

(2) *Daisy poured herself another cup of coffee. Thank heavens it was Saturday!*
Thank heavens it was Saturday, Daisy thought.

The example in (3) illustrates the effect of using *thank heavens* in a conditional clause.

(3) **If, thank heavens, it is Saturday, then we can sleep in.*

In accordance with informants' comments, the example is marked as ungrammatical. In section 2, I take a closer look at possible rescue interpretations of sentences like (3). Readers who feel that the example is not so bad after all will find a fuller picture there. The examples in (4) and (5) present *thank heavens* in the complement clause of a *verbum dicendi*.

(4) *Daisy said that, thank heavens, it was Saturday.*

¹ I have been thinking about these data for quite a while. I would like to thank all those who endured my meandering talks and gave me valuable input, in particular Magdalena Kaufmann, Orin Percus, Philippe Schlenker, Ede T. Zimmermann, and the audiences of the workshops *Presuppositions* at Göttingen, 2012, the Linguistic Colloquium Osnabrück 2012, *Shifting Indexicality* and *Semantics-Pragmatics Interface* at ICL Genève, 2013 and the Editor's Meeting of L+P, Frankfurt 2012. I tried to make the best out of all comments; this is the momentary result. This research was supported by the Courant Center *Text Structures* at Göttingen.

- (5.) *Every guest called and said that, thank heavens, he had managed to arrive in time.*

The relief expressed in (4) is once more Daisy's relief, and the example in (5) conveys that every guest who called did express relief about the content of his assertion. Given that each guest made a different assertion, we can assume that these instances of relief are individual reliefs and (5) does not report a case of collective thankfulness to the heavens.²

None of the listed properties in itself is surprising. Speaker orientation seems to be just another case of indexicality. Modal non-displacement was studied extensively by Potts as one characteristic of emotives (Potts 2007). Shiftable indexicality was first observed in Schlenker (1999) and has since raised interest in the literature (e.g. Schlenker 2004, Sharvit 2008, Eckardt 2012 a.o.). The use of speaker oriented words in the complement of *verba dicendi*, like in (4) and (5), seems perfectly natural and should easily be predicted by any analysis of verbs of saying.

Yet, this particular list of shared properties raises theoretical and empirical questions. On the theoretical side, the examples offer conflicting evidence about the scope and binding properties of context parameters. For instance, (3) seems to confirm that reference to context is always rigid and can not be bound by an operator. But if that is so, why can the contexts of utterance be perfectly quantified over in examples like (5)? If — as proposed by Potts — emotives always take highest scope, why is (3) unacceptable, instead of reporting the speaker's relief about the fact that '*if it is Saturday, then we can sleep in*'? We need an analysis that does justice to shiftability, bindability and non-displacability of context parameters.

On the empirical side, two observations are worth mentioning. First, the range of expressions which show the properties (i) - (v) is surprisingly wide and varied. They occur among epistemic modals, evaluative adverbials, evaluative comparative expressions, other emotive expressions, discourse adverbials and particles, and focus particles. They occur in languages as different as English and Mandarin Chinese — even though single languages can have specific grammatical repositories where they occur with high frequency, like German *Abönungspartikeln*. Section 2 offers a fuller list of examples. Second, the range of expressions which show the pattern (i) - (v) demonstrates that there is nothing in the core meaning of words *per se* which forces a word to show (i) - (v). Often, near-synonyms in a language exist of which one adheres to (i) - (v), and the other does not. Usually, the two items differ in whether they allow modal displacement or not (i.e. whether or not they fit (iii)). For example, English has the emotive *luckily* which, like *thank heavens*, can express the speaker's relief. Yet, while *thank heavens* is not modally displaceable, *luckily* can be used in a conditional sense.

- (6.) **If, thank heavens, today is Saturday then we can sleep in.
If, luckily, today is Saturday then we can sleep in.*

² The examples, again, need a brief comment. It was observed that (4) and (5) can have a second reading in which they convey relief of the person who utters (4) or (5) (I will also sometimes call this person the *external* speaker). This ambiguity turns out to be orthogonal to the aims of the paper.

Other such pairs are *leider* and *unglücklicherweise* ('regrettably') in German where *leider* can not be used conditionally, gradable adjectives like *so smart*³ / *extremely smart* where *so smart* can not be used conditionally, *dou ... lien* ('even') and *shen zi* (emotive 'even') in Mandarin Chinese, of which *shen zhi* can not be modally displaced, and more. This suggests that the list of properties (i) - (v) can not be a trivial consequence of obvious semantic facts like speaker orientedness or subjective judgement. Expressions which show (i) - (v) have to share a lexical property which is not predictable from their core content. I will refer to words, expressions and constructions which show (i) - (v) as *speaker commentary items*.

In section 2, I will illustrate (i) - (v) with more examples, and report on earlier papers which discuss one or the other property in isolation. None of these took (i) - (v) as a cluster of properties which belong together and have to be captured in a single analysis. Section 3 discusses existing theories and argues why none of them captures the cluster of properties for speaker commentary items adequately. Section 4 presents the three main parts of my analysis: Section 4.1. introduces a specific version of Kaplan's context theory and implements rigid and shiftable indexicality in this setup. Section 4.2. argues that speaker commentary items must be analysed as *lexically diagonalized*. Section 4.3. discusses the meaning of *verba dicendi* and proposes sets of contexts as the arguments of verbs of saying and thought. While none of the ingredients is completely new, the proper analysis of examples like (1) to (5) requires specific assumptions about the treatment of context parameters at LF which were not so far proposed in the literature. Section 5 applies the analysis to examples and offers the test of adequacy of the account. Section 6 summarizes and proposes questions for future research.

2. More speaker commentary items

The present section starts by a survey of speaker commentary items in German and English. The crucial properties (i) - (v) will then be illustrated for the whole class of words. Section 2.1. discusses shiftable interpretations, 2.2. the meaning and use of SCI in *if*-clauses, and section 2.3. takes a look at SCI in the complements of verbs of saying. Each section will also survey relevant earlier observations in the literature.

Epistemic modal expressions can provide examples for speaker commentary items. (7) presents a modal verb, but modal adverbs (*perhaps, certainly, bestimmt ...*) show the same properties.

- (7.) *Tom and Sue take a stroll downtown on a Saturday morning. At some distance, they see a woman who seems strangely familiar. Sue says:*
It might be Mom.
Das könnte Mama sein.

Particles in German offer a wide range of examples of speaker commentary items. I add an English paraphrase in each case but refer the reader to M. Zimmermann 2012 for a comprehensive discussion of their content.

³ *so smart* without a *that*-clause, like in the boastful *My son Billy, he is SO smart*.

- (8.) *Hein ist wohl einkaufen.*
 ‘Hein is wohl doing the shopping’ ≈ Hein has gone shopping, I guess.
 speaker indicates that his belief is based on inference or guessing, not on immediate observation.
- (9.) *Hein ist ja einkaufen.*
 ‘Hein is ja doing the shopping’ ≈ Hein has gone shopping, as I think you might know.
 speaker signals that he repeats possibly known facts because his argumentation will base on these facts
- (10.) *Hein ist doch einkaufen.* (unstressed *doch*)
 ‘Hein is doch doing the shopping’ ≈ Hein has gone shopping, which is unlikely to co-occur with *p* (*p* anaphoric).
 speaker signals slight surprise, invites hearer to check the truth of *p*.

It is important to keep in mind that an expression is a speaker commentary item in my sense *only* if it has properties (i) - (v). This is the case for German unstressed *doch* (see also Grosz 2010) but not for its stressed counterpart. Stressed *doch* can be used in a hypothetical clause, as illustrated in (11).

- (11.) *Es sieht so aus, als würde das Wetter gut. Falls es DOCH regnet, gehen wir ins Kino.*
 ‘It looks as if the weather will be fine. If it *DOCH* (≈ ‘yet’, ‘nevertheless’) rains, we will go to the movies’

Hence some but not all German particles are speaker commentary items.⁴

Expressions like English *of course* are also speaker commentary items, and seem to resemble German particles in flavour, though they were never granted a category of their own in English grammar books. I add the conditional to show that the comment *of course* can not be modally displaced.

- (12.) *Hein, of course, was everybody’s darling.*
 **If Hein, of course, was everybody’s darling, he would enjoy the party.*

More emotive expressions share the properties of speaker commentary items. While German expressions tend to be fully integrated in the clause, the English versions are often parenthetical. Yet, they can not be added as a parenthetical in conditional clauses, neither with sentence-wide scope nor with low scope.

- (13.) *Hein ist leider einkaufen.*

⁴ I added a tentative paraphrase of the speaker intentions to all earlier examples, and refrained from offering one for (11). This should not mislead the reader to believe that speakers of German have strong intuitions about which particles convey speaker intentions. They do not have these intuitions. My main concern was to test the acceptability in *if*-clauses. Speakers do have intuitions about these.

‘Hein is *leider* shopping’
Hein has gone shopping, alas.

(14.) *Hein ist gottseidank einkaufen.*
‘Hein is *gottseidank* shopping’
Hein has gone shopping, thank God.

(15.) **If, thank God, Hein has gone shopping then we can watch TV now.*

If we were only concerned with *thank Heavens*, it would be tempting to take their parenthetical nature as a starting point to explain that they can only occur in matrix clauses. Yet, even for these the proposal is immediately falsified by the observation that *thank God* can occur in embedded clauses which are the complement of a verb like *say* or *comment*.

Finally, there are certain emotive gradable adjective constructions on the list of speaker commentary items.

(16.) *Hein ist so ein Idiot / so cool.*
‘Hein is *such an idiot / so cool*’

Once more, these constructions convey that the speaker is surprised or emotionally touched by the degree to which Hein is an idiot, or his degree of coolness. Emotive adjective constructions are particularly useful examples of SCIs for English because they show a case of fully syntactically integrated speaker commentary items in English whereas many of our earlier English SCIs tended to sound parenthetical.⁵

The present list of examples should convince the reader that *speaker commentary items* are not co-extensional with earlier syntactic or semantic categories proposed in the literature. SCIs overlap with categories such as particles, emotive adverbials, modals and parentheticals but these are not necessarily sub-classes of SCIs or identical to this class. As a consequence, the explanation for (i) - (v) can not rest on properties like *modality*, *speaker orientation*, *syntactic integration* etc. which play a role for some but not all the expressions that we aim at. In the next three subsections, I will revisit the shiftable orientation, non-displacement and embeddability of speaker commentary items.

2.1 Shiftable orientation

All given items can be used in free indirect discourse/*erlebte Rede* with reference to a fictitious speaker. This can be tested for all the items above, and is also the case in the following example.

⁵ For instance, expressions like *of course*, *thank heavens*, *alas* etc. are not prosodically integrated in the clause. I will not assess their syntactic status in any detail because, whatever it may be, it can not be responsible for their speaker commentary characteristics: Other speaker commentary items, both in English and in other languages, are not parenthetical.

- (17.) *Sue sighed. Hein had gone shopping, **alas!***
*Sue seufzte. Hein war **leider** einkaufen.*
 = Sue's regret

Similar shifts can be observed in embedded indirect speech (German and English) and free indirect speech in the subjunctive mood (German).

It is important to note that judge-dependent expressions give rise to data which are similar, but not fully identical to those for speaker oriented items. Consider a taste predicate like *tasty*, or an evaluative adverb like *sadly*. Both can be used in indirect discourse and express a judgement by the speaker.

- (18.) *Sue was astonished. This cake was tasty!* (Sue's taste)
Sue sighed. Sadly, her cat had died. (Sue's regret)

Yet, judge dependent expressions differ from speaker commentary items in at least two respects. First, they can be modally displaced and be used in conditional clauses.

- (19.) *Taste the cake! If it is tasty, we will buy it.*
If Sue's cat, sadly, does not survive the operation, Sue will buy a hamster.

Second, the judge can be expressed in the sentence. In such examples, someone who is not the speaker can be the judge (Liu 2011).

- (20.) *This cake is tasty for dogs, but not for humans.*
Sadly for Sue (but not for her husband), the cat died.

Non-speaker judges can also be implicitly understood. For instance, (19.) can be uttered by a food manager who wants to find out whether the cake at hand is tasty for the general public, whereas the manager herself does not care for cakes at all. Speaker commentary items do not allow for non-speaker orientation. For instance, there is no use of *thank heavens* in the sense of *thank heavens-for-Sue* or a use of *maybe* in the sense *maybe-for-Peter*. Therefore, the available interface theories for judge parameters are inappropriate to handle speaker orientedness. Speaker commentary items should be treated on a par with indexicals, not with judge-dependent expressions.

This observation has repercussions for the analysis of commentaries in indirect speech. It has long been noted that examples like the following allow for two readings.

- (21.) I tell my husband:
Peter called and said that, thank heavens, he won't come tonight.
Peter hat angerufen und gesagt, gottseidank komme er
 Peter has called and said thank heavens come.SUBJ he
heute abend nicht.
 today evening not

These examples can be interpreted in sense (a) that Peter expressed relief. They also have a second reading (b) in which they express that the speaker, i.e. myself, is

relieved that Peter won't come. The temporal indexicals *tonight* / *heute* give rise to the same ambiguity. Should we care for this ambiguity, and what will it tell us for the purpose of the paper?⁶

Obviously, any semantic analysis of *thank heavens* and similar expressions should predict both readings. There might be an issue which one of them is the “normal” reading and which one is the “derived” reading (or whether they are equally ranked alternatives). If you maintain the claim that *thank heavens*—and indexicals in general—will always refer to the external speaker, then you'd prefer an analysis which takes the (b) sense as primary. However, the main body of our data suggests that speaker commentary items are not indexicals in this strict sense (they simply shift too easily). Hence, we should aim for an analysis which takes the (a) reading as primary, or at least as one standard way to interpret *thank heavens* in (21). We can then decide why, and how indexicals can chose orientation between internal and external speakers. What we should *not* opt for is an analysis which allows *thank heavens* to freely chose any accessible individual as its point of orientation. Such an analysis will give rise to *thank-heavens-for-John* and *thank-heavens-for-Mary* readings which, as we saw above, do not exist.

2.2. SCI in *if*-clauses

The present section takes a closer look at the ban on speaker commentary items from conditional clauses. Let us start by reviewing some more examples.

- (22.) ?*If Hein **might** have gone shopping, he has recovered from his illness.*
(23.) ?*Wenn Hein **leider** krank ist, kann er nicht kommen.*
If Hein leider sick is can he not come
(24.) ?*Wenn Hein ja/wohl krank ist, kann er nicht kommen*
If Hein ja/wohl sick is, can he not come
(25.) ?*If Hein is such a genius, you should hire him.*

I have listed all examples with ? to indicate that they all “need to be commented”. In fact, comments can be found in the literature.

Papafragou (2008) observes that epistemic modals in conditionals, like in (22), are generally ill-formed. This judgement echoes a general view on epistemic modals inherent in the literature (see e.g. Portner 2008, Cohen 2013 for a recent confirmation).

The use of evaluative adverbs of the kind in (23) was described as unacceptable in Liu (2011) with reference to earlier literature. Liu moreover reports another typical reaction of informants to sentences like (23). They tend to understand (23) as factual conditionals—i.e. in a sense “if you think that Hein, alas, is sick then you'd agree / we can assume/ I conclude ... that he can't come”.

⁶ The strikingly systematic patterns of possible readings for indexicals in indirect speech in German have been described in great detail by Plank (1983).

Embedded uses of *ja* were first mentioned in Kratzer (1999) and studied in depth in M. Zimmermann (2008, 2012). Authors agree that embedded uses are problematic, though none of the papers considers conditionals explicitly. Depending on the analysis, predictions for (24) vary, but all authors have a strong tendency to assume that particles are a root clause phenomenon. M. Zimmermann (2012) takes a more differentiated view on particles in embedded contexts, but he is mainly concerned with the compatibility of single particles with different *verba dicendi*. He observes that compatibility is determined by the semantic contents of verb and particle (see section 2.3.) but does not offer an explanation for the ban of particles from modal contexts.

Examples like (25), finally, *are* part of the literature on conditionals, specifically on factual conditionals (Iatridou 1991, Haegeman 2003). These authors do not judge the example as ungrammatical. Instead, they use these examples to reliably trigger a reading as factual conditionals. The quoted papers do not investigate whether the example has another, hypothetical conditional reading. I suspect that it doesn't.

What are factual conditionals? Iatridou (1991) characterizes their meaning as follows. Factual conditionals convey that *someone* already believes that the antecedent clause is true. This person need not be identical with the speaker or the hearer, as Iatridou's examples show (p. 60, ex. (27)).

- (26.) *A: I haven't read this book but John is reading it now and he says that it is really stupid.*
B: I haven't read it either but if it is so stupid, he shouldn't bother with it.

The reported judgements for (23) and (25) invite the hypothesis that SCIs in the antecedent of a conditional always trigger a factual reading. Let us test this hypothesis on basis of the examples in (22) - (25).

- (27.) *A: I talked to Hein's mother. She doesn't know where he is but guessed that he might have gone shopping.*
B: If Hein might have gone shopping, he has recovered from his illness.

In this dialogue, B's utterance sounds natural. He refers to the mother's reported belief that Hein might have gone shopping. *might* is not oriented to B but to the holder of the reported belief (=Hein's mother).

- (28.) *A: Hein's mother just called. Unfortunately (Leider) he is sick.*
*B: Wenn Hein **leider** krank ist, kann er nicht kommen.*
 'If Hein leider is sick, he can not come'

The answer in (28) is acceptable in the factual sense (see also Liu, 2011).

- (29.) *A: Hein's boss just called. Hein didn't show at work today. He is wohl sick.*
B: Wenn Hein wohl krank ist, sollten wir ohne ihn abfahren.
 'If Hein wohl is sick, we should leave without him'

The same holds true for expressive degree adverbial *such a*:

(30.) *If Hein is such a genius, you should hire him.*

This example is of a similar built as Iatridou's example in (26) and can be used in factual conditionals.

Particles pose a challenge but, as I will argue, for reasons not having to do with our case. It is difficult to create a dialogue in which a discourse particle can occur in a factual conditional. Many of them serve to indicate the speaker's plans for the ongoing discourse. Any good example, therefore, needs to provide a discourse which justifies the original use of the particle. In (29), A's use of *wohl* confirms that A, as well as the boss, infer rather than know that Hein is sick. Moreover, B's factual conditional renders not only the belief that Hein is sick, but also the original speaker's indication that he inferred "that Hein is sick" from other facts—like Hein not coming to work. This gives the factual conditional a quotational flavour: Why would it matter to B's point whether someone knows, guesses or infers that Hein is sick? Modulo these wrinkles, however, the example is acceptable.

The discourse particle *ja* expresses (i) that the speaker believes that the hearer might already know S, and (ii) that the speaker repeats S in order to support a preceding or following claim. If a factual conditional includes *ja*, then it conveys that someone asserted S, and did so in order to make a point. It appears that this complex message, again, is hard to fit into a factual conditional. This is a matter of lexical content, however, and not a matter of grammar or logical built of *ja*.

Iatridou (1991) does not offer any proposal for *why* expressions like *such a genius* or *so stupid* are restricted to factual conditionals. She argues that the syntactic attachment site of factual conditional clauses is higher than the attachment site of hypothetical conditional clauses. She also proposes that the content of *if*-clause and main clause are combined in a different manner than for hypothetical conditionals. Yet, we have seen that speaker commentary items are not simply restricted to root clauses: A mere syntactic restriction is problematic because it would predict that speaker commentary items are also prohibited in complement clauses for *verba dicendi*—which they clearly are not. The connection between clause type, utterance context and SCI must be more differentiated if we want to do justice to the range of SCI properties (i) - (v).

Further SCIs confirm the hypothesis, and as a result of this subsection we can refine the ban of SCIs from conditional clauses as follows:

(iii') speaker commentary items can only occur in *if*-clauses in case the conditional is interpreted as a factual conditional.

This observation is confirmed, at last for German, by the fact that speaker commentary items sound worse in conditional clauses which use the complementizer *falls* instead of *wenn*. German *falls*-conditionals refute a factual reading. Hence, the stronger markedness effect is to be expected.

(31.) **Falls* Hein **leider** krank ist, kann er nicht kommen.
in case Hein alas sick is can he not come

- (32.) *Falls Hein **vielleicht** krank ist, fahren wir ohne ihn.
 falls Hein perhaps sick is drive we without him
 *Falls Hein **wohl** krank ist, fahren wir ohne ihn.
 Falls Hein wohl sick is drive we without him
 *Falls Hein **so** krank ist, fahren wir ohne ihn.
 Falls Hein so sick is drive we without him

Ideally, these data should be assessed by an empirical study for both English and German. Readers confronted with (31), (32) sometimes seem to grant the speaker a lexicon which contains a factual use of *falls*. Ideally, examples should be systematically judged in contexts which exclude reference to a preceding assertion.

2.3. Complements of *verba dicendi*

For most speaker commentary items, authors agree that they can occur in the complement of *verba dicendi* and are oriented to the agent of that verb. Claims to the contrary are endorsed by few authors who categorize reorientation as the lack of a certain reading. For instance, Papafragou (2006: p. 1690) judges the following sentences as “unacceptable” for an epistemic use of the modal *must*. Her assessment is based on the observation that *must* in (33) does not express the speaker’s deontic necessity but Spiderman’s.

- (33.) (*)*Spiderman told me that Superman must be jealous of Louis.*

Judgements as Papafragou’s rely on the expectation that all reference to the speaker is rigid (i.e. behaves like the English pronoun *I*). If we allow for shifting indexicality, *must* in (33) remains an epistemic modal which is oriented to its local speaker, Spiderman. In accordance with this view, Ninan (2010) observes that *might* in (34) is John’s *might*, not the speakers.

- (34.) *John thinks that Sam might be in Boston.*

Commentary particles in German in embedded contexts are another topic of semantic debate. Kratzer (1999) mentions that *ja* can naturally occur under *verba dicendi*. M. Zimmermann (2008) takes a closer look at examples as the following and observes that the particle is possible when the semantics of the matrix verb and the particle are compatible. This is the case in (35) but not in (36).

- (35.) *Schröder sagt, dass die SPD wohl Hilfe verdient.*
 Schröder says that the SPD *wohl* deserves help.

- (36.) **Die Deern weiß, dass Hein wohl auf See ist.*
 The girl knows that Hein is *wohl* at sea

The particle *wohl p* expresses that the speaker inferred or guessed *p* rather than knowing that *p* which, as Zimmermann argues, is incompatible with the embedding verb *know* in the second example. If the girl *knows* that Hein is at sea, then she is not supposed to signal that she guesses or infers that Hein is at sea, hence semantic infelicity.

Embedded speaker commentaries can be bound by a quantified subject of the verb of saying/belief. While the respective examples look unspectacular in every respect, there is to date no formal analysis of any subclass of speaker commentary items which can treat dependencies like the following.

- (37.) *Every student_i believed that he, alas_i, was the weakest in class.*
Jeder Student_i dachte, dass er leider_i schlechtesten in der Klasse sei.
- (38.) *Each guest_i believed that this must_i be the best hotel in town.*
Jeder Gast_i glaubte, dies müsse_i das beste Hotel der Stadt sein.

In (37), the subject of regret covaries with the student in the matrix clause. The presence of pronominal *he* in the embedded clause is irrelevant, as revealed by (38). The holder of belief in (38) covaries with *guest* in the matrix clause, and there is no co-varying pronoun in the embedded clause.

The examples pose a challenge because indexicality is generally viewed as a pragmatic, extra-semantic phenomenon. This view has shaped analyses ever since Kaplan presented his first integration of indexicality and formal semantics. One of the cornerstones of indexicality was and remains the fact that these parameters are not bound by quantifiers. Therefore, all formal treatments are designed in a manner that nominal quantifiers (*every student*, *each guest*) interact with open variables at a level where indexical parameters are inaccessible. An adequate analysis should allow an indirect link between *every student* and the speaker of *alas* without turning the speaker parameter into just another kind of pronoun.

Section 2 has the following results.

- SCIs are not confined to any known class or category. They can occur all over the lexicon.
- Their orientation shifts with indirect speech.
- If they are used in a conditional, it is re-interpreted as a factual conditional.
- They can depend on quantified subjects in matrix clauses.

This is reflected in the literature as follows: Literature on epistemic modals and on particles has assessed the challenging embedding data of either of these classes. Cohen (2013) confirms the profile (i) - (v) for epistemic modals. The profile for (many) particles is entailed by M.Zimmermann (2008, 2012) even though the picture is blurred by the fact that some, but not all particles are speaker commentary items. Other constructions show (i) - (v) without having ever received attention in the literature, like emphatic degree constructions (*so smart*, *such an idiot*) or the emotive Mandarin Chinese *shen zi* (one of the two Mchinese expressions for ‘even’). If the same pattern occurs across lexical categories and languages as divergent as these, we might wonder about the underlying factors which determine this distribution. The next section reviews and criticises earlier literature before we turn to the elements of an analysis in section 4.

3. Earlier theories

The present section reviews earlier approaches which touched on the data in one or the other respect. No earlier author addressed the class of speaker commentary items

as a whole or treated (i) - (v) in one analysis. Likewise, quantification over utterance contexts was not commented on. Some papers were already mentioned in the previous section. They are added here for easier reference.

Portner's (2009, chapter 4) survey of research in epistemic modality covers *epistemic modals* as part of SCIs. His data include examples which illustrate all properties (i) - (v) and his survey aims to settle whether the existing accounts at the time could predict these. His main distinction is between theories which treat epistemic modals in terms of truth conditional semantics, versus theories which treat epistemic modals as speech act operators. In brief, he assesses that approaches in formal semantics fail to predict the non-embeddability of epistemic modals (i.e. (iii)) because, as it is easy to see, formal treatments of indexicals in general are not designed to exclude them from the scope of intensional operators: The pronouns *I*, *you* can occur in conditionals, belief contexts, questions and any other kind of context (Portner 2009: 163f). Speech act based approaches can potentially deal with (iii) better. However, these theories do not give an answer to the question how reported speech acts are related to actual speech acts, and in particular what we are supposed to make of quantificational examples like in (37), (38). Hence, he concludes, speech act based analyses are not suited to analyse SCI behaviour either. From the perspective of our paper, we should add that a substantial part of the literature surveyed in Portner (2009) is specifically designed for the case of modals. I will disregard accounts which attempt to derive the properties of epistemic modals from properties of modal bases and accessibility relations. In view of the fact that the majority of speaker commentary items are not modal expressions at all, we can conclude that such explanations are inadequate for our purpose.

Papafragou (2006) offers a detailed discussion of epistemic modals in embedded contexts. Her data are chosen to argue that such embeddings are never permitted, but — as illustrated above — this conclusion crucially hinges on the fact that she ignores shifting speaker orientation. Her analysis does not cover this aspect of epistemic modals in particular and SCIs in general and would require a substantive extension to capture the data. Portner (2009) also criticizes that her treatment of speaker orientation in parallel to classical indexicals does not guarantee that epistemic modals are excluded from *if*-clauses.

Ninan (2010) approaches subjective modals from the philosophical literature. He proposes to represent the meaning of a sentence like *John_i thinks that Bill might_i be in Boston* by forcing a coindexation between subject referent of *think* and the value of the variable assignment for speaker in a local context. I agree that the resulting semantic object can appropriately render the meaning of examples like Ninan's (34) (*John thinks that Sam might be in Boston*) and extends to the quantified cases in (37), (38). However, the analysis leaves it open how these representations are supposed to come about in a compositional manner. As far as Ninan (2010) goes, for instance, the proposed semantic representation of (34) could be extended to *thank heavens* as well as *luckily*.

(39.) *John_i thinks that Bill, thank heavens_i, is in Boston.*

(40.) *John_i thinks that Bill luckily_i is in Boston.*

Ninan's proposal does not explain why the manner in which this comes about in (40) is one which can also operate in *if*-clauses whereas the manner in which it comes about in (39), as well as the manner how it comes about for (34), is somehow blocked there.

Another account is presented in **Stephenson (2007)** who proposes to treat the speaker parameter of epistemic modals in parallel to the judge parameter of predicates of personal taste. As we saw in section 2.2., this allows for too many readings and does not do justice to the fact that speaker commentary items are *speaker* oriented instead of the more liberal *judge* orientation of taste predicates.

Von Fintel and Gillies (2011, and the preversion 2007 discussed by Portner 2009) suggest that statements with epistemic modal “put into play” a cloud of possible assertions which are oriented to the speaker, the addressee or both. The hearer has the choice to react to whichever he finds most plausible. This proposal elegantly accounts for the observation that a dialogue can shift between epistemic modals of different orientations without giving the impression of ambiguity or different “readings”. However, the proposal does not easily extend to more speaker commentary items. Von Fintel and Gillies' examples around *might* all rest on the interlocutors' shared aim to resolve an issue. If two interlocutors debate the truth of “*The key might be in the car*”, they have a joint interest in the proposition *The key is in the car* and a point in exchanging knowledge. Yet, such joint aims are not naturally in the background for other speaker commentary items. If one speaker uses expressive *damn*, then the emotion is not at issue. In *Damn, the key is in the car!* it is absolutely clear that the negative attitude is the speaker's, not the hearer's. Likewise, if a German speaker uses *doch* in *Der Schlüssel ist doch im Auto!* (‘the key is *doch* in the car’), his intention is to point out that this proposition (which he believes to be true) is in conflict with something that the interlocutor said (e.g.: *I can't find that damn key.*). The speaker invites the addressee to re-check his beliefs. This attitude is inherently bound to one speaker. It can neither be challenged nor reasonably adopted by another speaker or the group of both.

Against a broader range of data, hence, it looks as if we should first devise an analysis which cleanly attributes beliefs and attitudes to the right kind of speakers. Afterwards, we can discuss why in the particular case of epistemic modals, this clean attribution can be weakened to a more flexible pattern of orientations which are suited to further the common purpose of the interaction.

Fabricius Hansen and Sæbø (2004) offer a treatment of indirect speech in German. One could hope that such a theory integrates a treatment of shiftable indexicals. However, as far as their treatment of indexicality is concerned, the paper is not restrictive enough. The authors propose that the subjunctive mood in indirect speech raises the presupposition that there is an utterance, the content of which the sentence denotes. If the subjunctive is used embedded under a verb of saying, then this verb introduces a suitable utterance event. In free indirect speech, the reader will accommodate an utterance event, i.e. interpret the sentence as being uttered by someone.

While this analysis captures free and embedded uses in a uniform manner, the analysis does not restrict the resolution of speaker and hearer parameters in embedded clauses explicitly. If we extend their treatment of time to other context parameters,

we'd expect that speaker and hearer parameter are treated like free variables which are anaphorically resolved in context. Of course, it is easy to formulate the desirable restrictions: Speaker parameters should always be resolved to the speaker of the antecedent utterance event, addressee parameters to its hearer etc. Yet, the proposed analysis allows many more than just "reasonable" resolutions but also others. The formal status of speaker and hearer parameters in their approach is the same as the one of pronouns. As we saw in section 2.2., this is too liberal.

Particles are widely debated in current literature, but few authors pay attention to the projection and embedding data in (i) - (v). I therefore restrict attention to papers which take issue with the logical nature of particles. **M. Zimmermann (2004, 2008, 2012)** treats and compares the semantics of *ja*, *wohl*, *doch*, *schon* in various analyses. Their expressive content is provisionally phrased as presupposition which, intuitively, is inappropriate, given that the content of particles and SCIs in general doesn't have the character of being a prerequisite to understand the sentence. Moreover, presupposition triggers are not banned from embedded contexts and therefore this take won't do justice to their projection behaviour.

Egg (2010) investigates the pragmatic nature of particles, mainly exemplified by *doch* (stressed and unstressed). He proposes that particles express restrictions on contexts of utterance. This is an intuitively plausible proposal which the present paper aims to implement in a specific manner. Egg's proposal, in contrast, remains informal and does not allow to derive any specific prohibitions. In particular, Egg's analysis is supposed to cover both unstressed *doch* (which is a speaker commentary) as well as stressed *doch* which, as we saw in 2.2., can be used in conditional clauses and hence is not a speaker commentary in the sense of this paper. If Egg's proposal is spelled out in a way which is appropriate for the data that he has in mind, this analysis will fail to predict the SCI profile. After section 4, it will have become clearer that the hypothesis "SCI denote properties of contexts" requires a specific implementation, and that this implementation is more than a trivial spell-out of Egg's idea.

Potts (2007) takes a look at expressives which could be adopted for *thank heavens*. He convincingly argues that they are neither presuppositions nor assertions, and instead contribute CI content. (In Potts 2005, this third type of content is classed as conventional implicature. I will not take issue with the question whether *implicature* in the sense of Grice is the appropriate term; what is important is that there is a third type of commentary content which can be transmitted from speaker to addressee.) Potts observes that emotives in general do not allow modal displacement. His data support the assumption that their content is always project to highest level and hence, his analysis does not predict the ban of speaker commentary items from conditional clauses. What likewise remains to be added is a module which takes care of context parameters (speaker, addressee, world, place, time) and allows for quantification over these, like in examples (37), (38). These requirements go beyond Potts' basic account.

Finally, **Schlenker (2010)** approaches speaker oriented items from Kaplan's research in indexicality. His survey (2010/t.a.) offers a lucid introduction into Kaplan's original theory of context dependency and the different implementations of Kaplan's ideas that have been proposed in the literature. We will adopt part of his proposal in building up an analysis in the next section. Yet, he does not combine context dependency with an account of quantified speech reports, as we will do in the next

section. His survey confirms that no approach from this direction simultaneously addresses shiftability, embedding and the ban on modal displacement. In this field, he diagnoses the debate as being “still wide open” (Schlenker 2010, sect.3).

4. An Analysis

4.1. Context and Indexicality

I adopt Kaplan’s view that contexts c are a separate kind of (unstructured) entity. The domain of contexts D_c contains all contexts. I will leave it open whether models for natural language semantics include the full functional hierarchy over D_c , but we will at least make use of sets of contexts. Contexts are characterized by their speaker, addressee, time, place and world. These dimensions are captured by functions SP , AD , $TIME$, $PLACE$, $WORLD$ which map every context c onto entities of a suitable sort. Kaplan (1977[89]) proposes complete coverage of all possibilities: For all tuples of individuals, time, place and world $\langle \mathbf{a}, \mathbf{b}, \mathbf{t}, \mathbf{p}, \mathbf{w} \rangle$ there is a context c such that $SP(c) = \mathbf{a} \dots WORLD(c) = \mathbf{w}$. This yields a simple and elegant ontology, but one should be aware of the fact that not all contexts correspond to true speech situations in their world. If you consider a world \mathbf{w} , place \mathbf{p} and time \mathbf{t} , it is not possible that all individuals $\mathbf{a}_1, \mathbf{a}_2, \mathbf{a}_3 \dots$ that there are are also talking in that world, at that time, and at that place. For many purposes, it is useful to restrict attention to *coherent* contexts (E.Zimmermann, 1997; note that this *coherence* has nothing to do with coherence in the sense of text structure). A coherent context c is one where $SP(c)$ indeed talks to $AD(c)$ in $WORLD(c)$ at $TIME(c)$ and $PLACE(c)$. Coherent contexts are in play whenever we understand that some story is told as happening *in* the world *where* it is told. While our overall domain D_c contains all (Kaplanian) contexts, the restriction to coherent contexts will sometimes enrich the meaning of utterances.

A brief comment on my choice of logical types of contexts. An alternative setup that I pursued in Eckardt (2012) assumes that contexts are variable assignments for context parameters for speaker, addressee, place, world and time. At first sight, the implementations are intertranslatable. Yet, they differ when we want to implement operations like quantification or lambda abstraction over contexts (i.e. set formation). My considerations, in brief, were the following: [1] If we want to get access to context parameters (speaker, addressee ...) in semantic composition, we should not access these per single parameter. Either, we’d have to find out in each case which open parameters there are (which goes against semantic compositionality) or we’d risk empty binding (which is generally avoided in semantic analyses). Binding the context parameter, on the other hand, seems less risky because at least tense information will refer to context. [2] If we want to quantify or lambda abstract over contexts, then contexts need to be elements in our model domain. [3] If contexts are modelled as variable assignments of variables in some meta-language, we’d predict that elements of the meta-language are (parts of) objects in the model. The world we live in contains variables. This raises issues of non-groundedness in the model domain. [4] I do not want to claim that non-grounded models are unfeasible. Maybe they are a necessary consequence of the fact that we attempt to model talk-about-talking (*they said that, alas, it was raining*), instead of talk-about-the-world (*the cat is on the mat*). Yet, I try to avoid such foundational issues in the present paper.

In the next step I augment the basic Kaplan model by an analysis for shifting vs. non-shifting indexicals. I assume that natural language meanings are represented in some logical transfer language (Ty2) which contains variables which access model domains $D_e, D_s, D_{\langle e,t \rangle}$ etc. The domain D_c is accessed by two kinds of variables.

C-Variables V_C, V'_C, \dots or sometimes simply C_1, C_2, \dots
C-variables are indexical parameters,

instantiated by an external variable assignment (globally)
used to analyse rigid indexical words:

$\llbracket I \rrbracket := \text{SP}(C)$

$\llbracket \text{you} \rrbracket := \text{ADD}(C)$

c-Variables v_c, v'_c, \dots or simply c_1, c_2, \dots

c-variables can be lambda-abstracted

they can receive values other than the actual current speech situation

they are used to analyse speaker commentary items:

$\llbracket \text{alas!} \rrbracket := \lambda p. \text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{world}(c), p)$

We will benefit from this distinction when we interpret speaker commentary items in indirect speech. I will pursue the intuition that SCIs denote properties of utterance contexts. In the next subsection, I make use Lewis' proposal that verbs of saying and thinking take *sets of contexts* as their argument. These will reflect not only what the speaker said *about* the world she is in, but also how she felt when saying this, how she commented on this, which intentions she pursued with her utterance etc. This type of meaning has also been called the *diagonal* of the sentence, which can be derived from Kaplan's character (i.e. the function which maps contexts to propositions).

4.2. The content of utterances

Rich logical objects as arguments of *belief* have been discussed in the literature at latest since Lewis (1979) but are usually replaced by propositions in simpler textbook accounts. Speaker commentary items require a treatment which does justice to utterance content. The present section revisits the logical type of arguments of *verba dicendi* (used for verbs of saying and thinking). How should we capture the meaning of content of thought and speech? Lewis proposed that propositions are not suited to capture the content of utterances and instead, we should use sets of contexts. Lewis' proposal is particularly valuable to treat speaker commentary items. The present section motivates this steps whereas the formal details will be introduced in 4.3. Readers who trust that this idea is worth pursuing can move to the next subsection immediately. Consider the following example.

(41.) *Tom said that it snow was white.*

The following Kaplanian character corresponds to the embedded clause (see above):

$\lambda c \lambda w. \text{SNOW-WHITE}(w, t)$, or shorter $\lambda c \lambda w. \text{SW}(w, t)$

Disregarding tense for the moment (see 4.3.), we can constate that the content of *Snow is white* does not depend on the utterance context. The formula reflects this fact. We have several options how we could turn $\lambda c \lambda w. \text{SW}(w, t)$ into the argument of the predicat SAY.

We could propose that SAY takes propositional arguments. We could insert a context (any context) and derive a proposition.⁷

$$\lambda w.SW(w, t)$$

We could leave the character unchanged and take it as the argument of SAY:

$$\lambda c \lambda w.SW(w, t)$$

We could form the so-called diagonal of the character. It is what we get if we instantiate the world argument of the proposition $\lambda w.SW(w, t)$ by the world of the context of utterance (Haas-Spohn 1995, E.Zimmermann 1991; 2012).

$$\lambda c.SW(WORLD(c), TIME(c))$$

Zimmermann proposes that this turns the content of the sentence (“Snow is white”) into an assertion about the world in which the sentence is asserted (“Snow is white in the world where I am”).

In example (41), all three options could make sense. Let us next look at the same example where we add a speaker commentar item.

(42.) *Tom said that, thank heavens, snow was white.*

(42.a) $\lambda c \lambda w.SW(w, t) \ \& \ RELIEF(SP(c), TIME(c), \dots w \dots, \lambda w.SW(w, t))$

The tentative character of *thank heavens, snow was white* is given in (42.a). The argument of SAY covers (a) the assertion that snow is white and (b) Tom’s relief about this. It is left open in which worlds we check for the relief which is expressed by *thank heavens*. But clearly, the relief is context-dependent: It is the speaker’s relief at the time of utterance.

How can this be turned into a reasonable argument of SAY? Before turning to my eventual proposal, let me briefly present something which looks like an *attractively simple* analysis but which is not appropriate for (i) - (v).

An attractively simple analysis which does not work. In order to get an argument for SAY, we could treat (42.a) as Kaplan proposed to deal with characters. We instantiate the context parameter and find out $SP(c)$ and $TIME(c)$. This leads to a proposition—which would allow us to maintain the idea that *verba dicendi* propositional arguments. If we assume that the context c in (42) reasonably should be one where Tom speaks at some time t , we can derive the following proposition.

(42.b) $\lambda w.SW(w, t) \ \& \ RELIEF(SP(c), TIME(c), w, \lambda w.SW(w, t))$
 $= \lambda w.SW(w, t) \ \& \ RELIEF(TOM, t, w, \lambda w.SW(w, t))$

⁷ I will not ponder on how t is dealt with — eventually it would make sense to get that t is the time when the utterance takes place.

I.e. we would be considering worlds where snow is white, and Tom is relieved about the fact that snow is white. This looks like an adequate argument of SAY. So why does this attractive analysis not work?

No matter how we spell out the steps in detail, we will allow to form the proposition “that Tom was relieved about ‘that snow is white’” in one way or another: either because the world argument is an argument of RELIEF from the beginning, or by lambda-binding the world argument of RELIEF (following Intensional Functional Application, Heim + Kratzer 1998, von Stechow + Heim 2007). But if this binding is permitted, then it is impossible to prevent intensionalization in other contexts, for instance in the scope of *if-then*. The analysis would predict that SCIs can get in the scope of modal operators. But they can’t.

Diagonalization might help. In (42.b) we assumed that the world parameter of RELIEF was like the world parameter of SNOW-IS-WHITE. Instead, we could stipulate that speaker commentary items *always* state something about the world of the context in which the utterance is made (the crucial part is underlined).

(42.b) $\lambda w.SW(w, t) \ \& \ RELIEF(\text{SP}(c), \text{TIME}(c), \underline{\text{WORLD}(c)}, \lambda w.SW(w, t))$
 $= \lambda w.SW(w, t) \ \& \ RELIEF(\text{TOM}, t, \underline{\text{WORLD}(c)}, \lambda w.SW(w, t))$

Which one is the world of *c*? It seems clear in (42) that the speaker is Tom, the story might also entail *when* Tom is talking. Yet, worlds are never uniquely determined. We need to talk about sets of contexts. Let us form the diagonal of (42.b). This is what we get.

(42.c) $\lambda c.SW(\text{WORLD}(c), t) \ \& \ RELIEF(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \lambda w.SW(w, t))$

“All contexts *c* which are in a world where snow is white, and where the speaker at the time talking is relieved in this world about the fact that snow is white”

As the paraphrase reveals, this representation retains reference to worlds (qua world-of-context) but can moreover represent properties of the distinguished individual SPEAKER, like the property that the speaker at the time had certain feelings. Moreover, this derivation ensures that the world parameter of SCIs can not get in the scope of a modal operator. It can only be in the scope of operators which can take sets of contexts as their argument. This offers a promising basis to account for (iii) “no modal displacement”.

In order to make this idea precise, we use two assumptions:

- *Verba dicendi* take sets of contexts as their argument.
- Speaker commentary items are lexically diagonalized: They never refer to “the world” simpliciter, but always to “the world of the utterance context where the word was used”.

Section 4.3. implements these ideas. In section 5 we will investigate the predictions of the account for the embedding data: Quantification over utterances, and no-modal-displacement.

4.3. Diagonals as denotations

The present section has two aims: We need to spell out the steps in which we derive the appropriate sets of contexts for complements of *verba dicendi* and we will discuss the meaning of “uttering a set of contexts”.

I assume that the content of words, tense and aspect morphemes and possibly other semantic material can be composed up to the clausal level and will yield a representation which covers the truth conditional content of the clause, dependent on a world parameter w , and context parameters c and C . I moreover assume that all sentences are in the indicative mood and are tensed; therefore all sentences will at least depend on C in the representation of tense. Let us take a simple sentence like *It rained.* as an example. This is the denotation of the core clause:

$$[[\textit{it rained}]] = \exists t(\text{RAIN}(w, t) \wedge t < \text{TIME}(C))$$

I include a minimalistic representation of tense in order to remind us of this type of context dependency. Standard semantic frameworks will include the possibility to derive the *proposition* and the *character* of “*It rained*”.

$$\begin{aligned} \text{proposition:} & \quad \lambda w. \exists t(\text{RAIN}(w, t) \wedge t < \text{TIME}(C)) \\ \text{character (trad.):} & \quad \lambda C \lambda w. \exists t(\text{RAIN}(w, t) \wedge t < \text{TIME}(C)) \end{aligned}$$

The present framework offers two kinds of context dependence: shiftable and non-shiftable. We reserved two types of context variables for these. Therefore, we need to allow for two types of character. We can form the *shift* character of a sentence by abstracting over c . This shift character will be used in indirect speech and free indirect speech, where shiftable indexicals should shift. In addition, we can form the *rigid* (or traditional) character, as above. Hence, the core clause *It rained* allows to derive the following semantic objects.

$$\begin{aligned} \text{proposition} & \quad \lambda w. \exists t(\text{RAIN}(w, t) \wedge t < \text{TIME}(C)) \\ \text{shift character} & \quad \lambda c \lambda w. \exists t(\text{RAIN}(w, t) \wedge t < \text{TIME}(C)) \\ \text{trad. character} & \quad \lambda C \lambda w. \exists t(\text{RAIN}(w, t) \wedge t < \text{TIME}(C)) \end{aligned}$$

The shift character in this case involves empty binding whereas C remains free. This is adequate in examples like *Tom said that it rained.* The tense of Tom’s reported utterance is rendered from the point of view of an external speaker, and whatever Tom said, he was unaware of the fact that someone would report it later.⁸

Let us next discuss the semantic objects which can be derived from commentary content. I will take *Alas, it rained* as an example, being aware of the fact that *alas* sounds archaic to most speaker’s ears. Speakers of English who feel that their sense of style is badly violated might read the example as a gloss of German *Leider regnete es.* which is perfectly colloquial German, including the SCI *leider* (\approx ‘alas’). I will use **P**

⁸ Admittedly the treatment of tense and aspect remains rudimentary here. A fuller version should take into account reference time R , speech time $\text{TIME}(C)$ and the relation between R and the protagonist’s speech time. Doron (1991), Eckardt (2012b) propose that external reference time R is identical to $\text{TIME}(c)$ which accounts for the much more specific temporal content of clauses in reported speech. The details are, however, beyond the scope of the present paper.

to stand for the content of the speaker's regret. **P** will be one of the semantic objects that can be derived for *It rained*, and it is not my main concern here which one is most appropriate. This is the commentary content:

$$\text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})$$

Obviously, the attempt to derive a set of possible worlds is meaningless. However, we can derive the set of all contexts for which it is true that the speaker at the time in the world regrets **P**.

$$\lambda c. \text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})$$

‘set of all contexts in which the speaker, at the time, in that world, regrets content **P**’

Extending earlier terminology, I will call this the shift-diagonal of “*alas P*” because it covers shiftable but not rigid indexicals.⁹ This semantic object will be useful to analyse the content of indirect speech and thought. In order to capture utterance content in “normal, one-speaker-only” situations, we can make sure that reference to *c* and *C* is identified. We can derive the traditional (rigid) diagonal by (a) forming the shiftable diagonal, (b) applying it to *C* and (c) lambda abstract over *C*. Afterwards all context parameters refer to the external context. For the present example we get, somewhat unspectacularly:

- i. $\lambda c. \text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})$
- ii. $\lambda c. \text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})(C)$
 $= \text{REGRET}(\text{SP}(C), \text{TIME}(C), \text{WORLD}(c), \mathbf{P})$
- iii. $\lambda C. \text{REGRET}(\text{SP}(C), \text{TIME}(C), \text{WORLD}(C), \mathbf{P})$

When we form the traditional diagonal, we lose the distinction between shiftable and non-shiftable indexicals. This step should therefore be strictly limited to LF nodes which are root clause nodes, or which are the complements of *verba dicendi*. I will not devise a full agreement mechanism to ensure this restriction.

Combination of asserted and commentary contents in indirect speech environments: In order to derive the content of indirect speech, we derive the shiftable diagonals of all parts of the sentence, and combine these by intersection. In our example *Alas, it rained*, we have two parts to combine:

It rained (in shiftable diagonal)

form the shiftable character, and diagonalize (instantiate the *w* argument by the world of context):

$$\lambda c. \exists t(\text{RAIN}(\mathbf{WORLD}(c), t) \wedge t < \text{TIME}(C))$$

Alas, P as shiftable diagonal (where $\mathbf{P} \approx$ ‘*it rained*’)

$$\lambda c. \text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})$$

⁹ To appreciate the difference, compare *Alas, I was wet*. In this case, the content of regret depends on $\text{SP}(C)$ while the subject of regret remains $\text{SP}(c)$: $\lambda c. \text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P}(C))$ You can see that the two speaker can diverge in texts as the following: *My mother looked at me. I was wet, alas! she thought*. The external speaker is wet, but it's the mother who regrets this.

Intersection:

$$\lambda c.[\exists t(\text{RAIN}(\mathbf{WORLD}(c), t) \wedge t < \text{TIME}(C)) \\ \wedge \text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P}))]$$

This can be paraphrased as “contexts which are in a world where it rained at some time (before the time of C , which is given externally), and where the speaker in that world regrets this”.¹⁰ — This is the kind of sets that we will use in the rest of the paper. However, to make the story complete we can finally derive the traditional (rigid) character for the sentence *Alas, it rained*. We derive it by intersecting the traditional diagonals of either part.

It rained (rigid diagonal)

form the rigid character, and diagonalize (instantiate the w argument by the world of context):

$$\lambda C. \exists t(\text{RAIN}(\mathbf{WORLD}(c), t) \wedge t < \text{TIME}(C))$$

Alas, P (rigid diagonal, as detailed above)

$$\lambda C. \text{REGRET}(\text{SP}(C), \text{TIME}(C), \text{WORLD}(C), \mathbf{P})$$

Intersection:

$$\lambda C.[\exists t(\text{RAIN}(\mathbf{WORLD}(C), t) \wedge t < \text{TIME}(C)) \\ \wedge \text{REGRET}(\text{SP}(C), \text{TIME}(C), \text{WORLD}(C), \mathbf{P}))]$$

Let us summarize the achievements of this part.

- We can derive the **shift-diagonal** of sentences: the set of contexts which influence the meaning of shiftable indexicals and are hence crucial for meaning in indirect speech.
- We can derive the **traditional diagonal** of sentences: the set of contexts which are part of a world in which the sentence, uttered in that context *about* this world, is true.
- We can derive the **propositional content** of “ordinary” clauses, as usual
- We can *not* derive a propositional content of commentary parts of the sentence.

The next subsection describes how verbs of saying combine with their clausal complement, making use of the above results.

4.4. The meaning of SAY

This section discusses the semantics of verbs of saying and thought, using *say* and *think* as main samples. Other verbs can be reinterpreted as verbs of saying (*smile, groan, object...*), mood can indicate indirect speech, and we can even understand that someone is talking or thinking in free indirect discourse.

¹⁰ Again, the temporal information is not satisfactorily rich. A full analysis with reference time, speech time and a link between Tom’s and the speaker’s time parameters should come up for this.

I assume that *say* and *think* are systematically ambiguous. In one sense, they relate a speaker, an utterance event, a world and a proposition. In another sense, they relate a speaker, an utterance event, a world and a set of contexts. We will mainly be concerned with the latter (less commonly used) reading.

Assume that SAY, THINK are relations between agent, eventuality, world and a set of contexts (Lewis 1979, E.Zimmermann 1991, 2012, Haas-Spohn 1995, Schlenker 2010 a.o). A sentence like (43) relates **Tom** to the shift-diagonal of *it rained* as computed above.

(43.) *Tom said that alas, it rained.*

$$\begin{aligned} &\exists e[\text{SAY}(\mathbf{Tom}, e, w, \\ &\quad \lambda c.[\exists t(\text{RAIN}(\text{WORLD}(c), t) \wedge t < \text{TIME}(C)) \\ &\quad \wedge \text{REGRET}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})]) \\ &\wedge \tau(e) < \text{TIME}(C)] \end{aligned}$$

What is the content of the SAY relation? Or, in more practical terms: When we observe a situation and then have to determine for a given set of contexts $\lambda c.\Phi(c)$ and person **T** whether or not **T** stands in the SAY relation to $\lambda c.\Phi(c)$, how would we proceed?

At the level of “what happens”, authors suggest that we need to witness an utterance of **T** of *some* sentence (of English, say) which has the character $\lambda c.\Phi(c)$.¹¹ Schlenker (2010:9) discusses the following definition (applied to our example *Alas, it rained*):

- Tom says that alas, it rains* is true at c^* , t^* , w^* iff there is a character χ such that:
- (i) the content of χ given the context of Tom’s speech act (call it c) is that it rains, and Tom regrets this,
 $\chi(c) = \lambda t, w$ it rains, and Tom regrets this at t, w (= the content of the embedded clause), and
 - (ii) Tom asserts χ at t^* , w^* .

Part (ii) gives rise to an ancillary question. What does it mean that Tom asserts a character? What does the speaker want the hearer to believe? Putting yourself in the position of Tom in (43), one answer could be this: Tom is aware of what he is saying or thinking (i.e. he is not talking under hypnosis, he doesn’t think or talk in a dream or in sleep, he is not drunk, etc.) and believes that his *event of thinking or uttering* has the property $\lambda c.\Phi(c)$. By entailment, he and we can infer that the world of the utterance is of a certain kind (it is a world in which it rained), that the speaker of the utterance has certain feelings or comments (he doesn’t like the rain). Obviously, not all kinds of events give rise to similar entailments. Events of saying have thematic

¹¹ There is a lively debate around the following question: If we describe a scene by (43), how much is what Tom says allowed to differ from the string „*alas it rain(-ed/s)*“? Scholars agree that the theory should somehow predict „not too much“. Modifications of standard semantics have been proposed which come closer to this prediction. They often have the unwelcome side-effect that the resulting theory comes close to a theory of quoting and moves away from a theory of meaning. I have nothing to say about this aspect of indirect speech reports.

roles which give us access to a person's beliefs. Events of thought are similar in that we all have privileged access to our own thoughts and can link them to our beliefs. Our theory of mind, and our expectation that other humans function more or less like ourselves in these matters, allows us to generalize to other peoples' thoughts. We treat thought reports on a par with speech events, even though we can not *witness* thought in the same direct way as we witness speaking.

The present proposal builds on earlier accounts of *belief* in the literature (Schlenker 2010: definitions 14, 15). Yet, there is a slight conceptual difference between such proposals in the literature and our case. While BELIEF is an atemporal property of rational agents, THINK and SAY are anchored in time and refer to activities and events. The parallel of events and utterance contexts (situations) was pointed out in Schlenker (2010, fn. 3) but has not so far been made use of. Usually, BELIEF is taken to be the core case of propositional attitude. BELIEF as a relation between subjects and sets of contexts was first proposed in order to capture *de-se* belief, taking issue with the different mind frames that can be reported by *David believes that his pants are on fire*. I distinguish between verbal or mental events (saying, thinking, claiming, worrying and what not) and beliefs which are not tied to any such expirimation.¹² The level of *belief* in the independent sense is not tied to sets of contexts. There seem to be good reasons to model beliefs as structured objects; in our case the belief that *e* is in $\lambda c.\Phi(c)$ as the tuple $\langle e, \lambda c.\Phi(c) \rangle$ (see Kupffer xxxx and references therein). Utterances/thoughts entail beliefs about the world of the utterance, which can then be re-translated into knowledge and information transfer. The perspective of the present paper highlights the distinction between temporally anchored utterance/thought and static belief.

Having settled the content of SAY and THINK, let us finally spell out how the meaning of *say* and *think* combines with the meaning of its complement CP at LF. I propose a flexible type driven interpretation mechanism which rests on *character functional application* (CFA), in analogy to 'intentional functional application' (IFA) in Heim and Kratzer (1998).

(CFA) If α has a denotation of $\langle\langle c, t \rangle, \sigma \rangle$ and β has a denotation of type t (which depends on w, c), then
 $\llbracket \alpha \ \beta \rrbracket := \alpha (\beta')$ where β' is the *shift diagonal* derived for β

Taken together with (IFA), we get the following possible ways to combine *say/think* and a clausal complement:

- The clausal complement allows to derive a proposition. (i.e. does not contain an SCI) Then, this proposition can be combined with the proposition-taking versions of *say, think*.
- The clausal complement does not give rise to a proposition. (For instance because it contains an SCI.) The context-set version of *say/think* will combine with the clausal complement by CFA.

¹² Of course, you will usually believe what you think and - mostly - what you say but you will go on believing your beliefs even if you have stopped talking or thinking about them.

At the moment, SCI are the only expressions which give rise to content which is necessarily diagonalized. It remains to be explored whether other words or forms like the reportative subjunctive mood could likewise be necessarily diagonalized and therefore restricted to *verba dicendi* as matrix operators.

In summary, Section 4 introduced core ideas from earlier literature which I used in the analysis of speaker commentary items.

- contexts and characters (Kaplan 1977[1989])
- diagonalization and utterance content (E.Zimmermann 1991, Schlenker 2010)
- attitudes as relations between subject and diagonals (Stechow + E.Zimmermann 2004, Schlenker 2003, 2010)

These ingredients were expanded and put together in a specific manner in order to get the basis of a working analysis of speaker commentary items. Specifically

- two ways to refer to contexts (variables c_1, c_2, \dots vs. C_1, C_2, \dots) in order to capture shifting and rigid indexicals
- shift diagonals and rigid diagonals which reflect the difference between utterance content in indirect speech/thought vs. utterance content in direct speech situations
- operations of context-set formation and their operating at LF
- speaker commentary items as lexically diagonalized words

We used simple examples on the way in order to illustrate parts of the analysis. Section 5 returns to speaker commentary items and shows how their characteristics (i) - (v) can be accounted for.

5. The analysis put to test

Let me repeat the defining properties for speaker commentary items (SCI).

- i. The item is oriented to the speaker
- ii. When speakers change (e.g. in indirect speech), the item also shifts orientation
- iii. The item is banned from *if*-clauses, it prohibits modal displacement
- iv. The item is acceptable in complement clauses of *verba dicendi*
- v. ... where it can also be quantified over

SCI can be of many grammatical types. Some add a comment to an independent assertion (e.g. *thank heavens*), some contribute both commentary and propositional content (*he is SO smart* = 'he is very smart' + 'speaker is astonished'), some might modify the asserted content (*maybe, he is sick* ≠ 'he is sick' + 'I am not sure') and perhaps, there are more ways of combination. I will not address the specific challenges posed by each SCI. I will use one SCI to illustrate how the proposed analysis can predict (i) - (v). Section 4 was based on the somewhat forced *thank heavens* and *alas*, mainly because their commentary content is relatively clear. In the present section, I want to use the less discussed English *no wonder*. It is also SCI and a very common part of everyday English.

The meaning of *No wonder*, *S* is not simply “*S* holds true, which does not surprise me”.¹³ This can be tested when we try to use ‘*no wonder*’ in various contexts. Imagine that you are visiting England. You wake up in the morning and open the curtain. It is raining. You have strong beliefs about the English climate, and have been told that it is raining most of the time. So the weather condition does not surprise you. Still, it would be inappropriate for you to say (44).

(44.) #*No wonder it is raining.*

is used to mark that the sentence is grammatical but would be inappropriate in the described situation. The expression *no wonder* indicates a complex inferential process in the speaker’s mind. The speaker must have known *S* before (even if she may not have asserted it so far). The speaker has just learned *another* fact. And this new, other fact makes *S* much more plausible, less surprising than it was without this other piece of information. For example, an appropriate situation to use (44) could look as follows: You have strong beliefs about the English climate and have been told that it rains all the time. You are on a trip around the world under the care of your well-organized partner. Your plane has just landed but you don’t know in which country. The weather, obviously, is awful. The pilot of the aircraft announces: “*We have now safely landed at Heathrow airport. Welcome to England.*” At this point, you put two and two together and utter (45).

(45.) *No wonder it is raining.*

The paraphrase in (45.a) spells out the content of “*no wonder*”:

(45.a) *No wonder S*

asserts:

S is true in the utterance context *c*.

SP(*c*) knew that *S*.

SP(*c*) has just learned or found out something *T* which makes *S* much more likely, and is relieved/pleased about this insight.

RELIEVED-UNDERSTANDING(SP(*c*), TIME(*c*), WORLD(*c*), **P**)

As (45.a) reveals, English *no wonder* conveys very private information about the speaker and his ongoing stages of understanding. To avoid clumsy lists of conditions, I will abbreviate the above list of commentaries as RELIEVED-UNDERSTANDING(SP(*c*), TIME(*c*), WORLD(*c*), **P**) or briefer RUNDERSTAND(SP(*c*), TIME(*c*), WORLD(*c*), **P**). This adds to the assertion **P**. My analysis adopts the characteristics of speaker commentary items: It refers to the speaker in a shiftable manner, and is lexically diagonalized (refers to WORLD(*c*) instead of possible world *w*).

(i) Speaker orientedness

¹³ The meaning of *no wonder* was also discussed in Eckardt (2013a).

The proposed analysis of *no wonder* relates to the speaker. As a result, *no wonder* can not express relieved-understanding of anyone but the speaker of the utterance. Uses with other experiencers, be they implicit or explicated, are not possible.

- (46.) *No wonder it is raining.*
 available: I got new reason for why it is raining.
 unavailable: you / Pete / ... got new reason for why it is raining.

The semantic and expressive content of (46) gives rise to the following, context dependent meaning. (As before, **P** is the proposition denoted by '*it is raining*').

$$\exists t(\text{RAIN}(w, t) \wedge t < \text{TIME}(C))$$

$$\text{RUNDERSTAND}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})$$

We derive the traditional diagonal of these two parts of meaning.

$$\lambda C. \exists t(\text{RAIN}(\mathbf{WORLD}(C), t) \wedge t < \text{TIME}(C))$$

$$\wedge \text{RUNDERSTAND}(\text{SP}(C), \text{TIME}(C), \text{WORLD}(C), \mathbf{P})$$

If someone asserts this character, then this person expresses that s/he believes to be in a context where it rained (in the world around my context), and that s/he (believing to be the speaker of C), now and here, has a new relieved understanding for the proposition 'it rained'.

Relieved and new understanding are predicated over the speaker of C. Therefore, it is not possible to convey that a third person has gained this new understanding, or to instantiate the experiencer explicitly in syntax.

- (47.) **No wonder for Joe is it / it is raining.*

These predictions are correct.

(ii) Shifts of orientation

The use of (45) in indirect speech requires either a present tense story (which is somewhat artificial) or an adjustment of tense (see Eckardt 2013b for extensive discussion). We will therefore consider example (48).

- (48.) ... *No wonder it was raining, thought Pauline.*

(48) conveys two parts, an assertion and a commentary. These are the two ingredients. (Lacking a detailed treatment of aspect, *it was raining* and *it rained* are — inappropriately—treated as synonymous.)

It was raining — form the shiftable character and diagonalize:

$$\lambda c. \exists t(\text{RAIN}(\mathbf{WORLD}(c), t) \wedge t < \text{TIME}(C))$$

No wonder, P — shiftable diagonal of (where $\mathbf{P} \approx$ '*it was raining*')

$\lambda c. \text{RUNDERSTAND}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})$

intersection:

$\lambda c [\exists t (\text{RAIN}(\mathbf{WORLD}(c), t) \wedge t < \text{TIME}(C))$
 $\wedge \text{RUNDERSTAND}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})]$
 $=: \lambda c. \Phi(C, c)$

The word *thought* has to denote context-taking THINK because we can only derive a (shifted) diagonal. (CFA) will instruct us to do so. This instruction will also prevent a (false) reading on basis of the traditional diagonal instead of the shift diagonal. We can now relate the resulting set of contexts to **Pauline** by THINK and get (48.a).

(48.a) $\exists e. \text{THINK}(\mathbf{Pauline}, e, w,$
 $\lambda c [\exists t (\text{RAIN}(\mathbf{WORLD}(c), t) \wedge t < \text{TIME}(C))$
 $\wedge \text{RUNDERSTAND}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P})])$
 $= \text{THINK}(\mathbf{Pauline}, e, w, \lambda c. \Phi(C, c))$

This is true iff Pauline had an appropriate thought in e , abbreviated as $\lambda c. \Phi(C, c)$ in the short version above. (48.a) entails that Pauline believes that her thought is one where the speaker (i.e. Pauline) is in a world where it was raining, and that the speaker (i.e. Pauline) has a new, relieved understanding for **P** (= that it was raining). Pauline has a belief about her world ('it was raining') and about herself ('she has a new and better understanding for why/that it is raining').

The representation correctly reflects that the relieved understanding is Pauline's and not a relief and understanding of one who utters (48). The representation also reflects that past tense is *not* the past tense of Pauline (the raining seems to be going on while she is thinking) but the past tense of the one who utters (48). This, again, is correct. Other rigid indexicals would be treated analogously. In example (49), the reference of *I* remains to the external speaker, it does not shift to Pauline.

(49.) *Pauline looked at me with new understanding. No wonder I was angry!*

We can therefore constate that the shift of indexicals in indirect speech contexts can be appropriately captured. The exact links between tense (rigid) and utterance context remain to be investigated (Eckardt, 2013b).

(iii) The ban on SCI in *if*-clauses

Let us check next what the analysis predicts for the use of SCIs in conditional clauses. Our test item *no wonder*, like many English SCIs, is not prosodically integrated in the clause and has a parenthetic flavour. We will discuss an example where the syntactic position of *no wonder* ensures that it is linked to the subordinate clause.

(50.) *?If, no wonder, it was raining, the streets were wet.*

(50) shows the markedness effects described in section 2.3. (Obviously, *no wonder* can be combined felicitously with the conditional sentence as a whole once it is placed in a different position. These readings are not those that we are interested in.) The data show that *no wonder* can not syntactically be moved to the CP level at LF. Otherwise, (50) would be acceptable and have a reading like ‘If it was raining, the streets were wet — and I just learned something which makes this fact less surprising’. We can therefore assume that *no wonder* is interpreted in the subordinate clause and takes *it was raining* as its argument. Its denotation will become part of the restrictor of *if*.

Conditionals denote quantification over sets of possible worlds. In the semantic composition of (50), the interpretation of the *if*-clause will have to be chosen such that the result is a proposition. This is problematic for the part contributed by the SCI. As we saw in section 4, this part can give rise to diagonals but not to propositions. A radical interface theory might constate that semantic composition therefore is bound to fail because the type of functor and argument can not be brought to match. Such an interface theory will predict that (50) is uninterpretable. This leaves it open how a factual interpretation becomes available instead. I will therefore propose a less radical interface. The contribution of SCI is interpreted and conjoined with the denotation of the clause ‘*it rained*’. Intensional functional application then operates on the whole resulting denotation. Making these assumptions, a standard treatment of conditionals yields the interpretation in (50.a) where **P** abbreviates “that it was raining”.¹⁴ All world variables which are bound by $\forall w$ are given in bold.

$$(50.a) \lambda w_0 \forall \mathbf{w} [\text{SIMILAR-ENOUGH}(\mathbf{w}, w_0) \\ \wedge \exists t(\text{RAIN}(\mathbf{w}, t) \wedge t < \text{TIME}(C_o)) \\ \wedge \text{RUNDERSTAND}(\text{SP}(C_o), \text{TIME}(C_o), \text{WORLD}(C_o), \mathbf{P})] \\ \rightarrow \llbracket \textit{The streets were wet} \rrbracket(\mathbf{w})]$$

The assertion part of (50.a) can be paraphrased as follows: “As seen from w_0 : All worlds where it rained and which are sufficiently similar to our own are worlds where the streets were wet.” The conditional clause contributes to the restrictor of a universal quantifier, and the main clause contributes the scope (see von Stechow + Heim 2007, Portner 2009, for a treatment of conditionals). However, there is more semantic material in the restrictor: There is a conjunct which states ‘that the speaker understands with relief that it was raining’, contributed by *no wonder*. This conjunct does not depend on w at all. It depends on some utterance context C_o .

Logicians will observe that (50.a) leaves two options. The conjunct $\text{RUNDERSTAND}(\text{SP}(C_o), \text{TIME}(C_o), \text{WORLD}(C_o), \mathbf{P})$

could be true or false. In the latter case, the restrictor becomes trivial which means that (50.a) is trivially true in all worlds. In natural language, trivial quantifications are rare and conditionals are normally used with the presupposition that the restrictor is

¹⁴ I use SIMILAR-ENOUGH as a cover term for all more elaborate ways to spell out which possible worlds are relevant to assess the truth of the conditional. As far as I can see, none of the data under investigation has to do with the proper choice of modal bases, ordering sources, rankings between worlds or such.

non-empty (i.e. there are cases that we can look at). Hence, the hearer will assume that the speaker has in mind a context C_o where

RUNDERSTAND(SP(C_o), TIME(C_o), WORLD(C_o), **P**)

is true. In other words: Someone — either the speaker herself or someone else— expressed that they gained a new, relieved understanding for **P**. This, however, is only possible if the person in question believes **P** in the first place. Hence, we predict exactly Iatridou's content of factual conditionals: There is someone who already believes that **P** is true (in the present case: that it was raining). This is in line with the data, as discussed in section 2.3. As we saw, it may depend on context and content of the example whether a factual interpretation of the conditional is plausible. However, the conditional lacks the hypothetical reading which is blocked by the use of an SCI.

It may be worth to take a closer look at *what* exactly caused this effect. It is not the use of a speaker comment as such. The SCI adds a comment about the prejacent which presupposes that someone believes the prejacent to be true. Expressing an attitude towards a referent, in contrast, does not affect the hypothetical reading of a conditional. A conditional like *If Kreske, that bastard, shows up, I will kill him* can be interpreted as a hypothetical conditional because the comment *I don't like Kreske* does not entail any beliefs about whether Kreske shows up or not.

Some readers may object that the same effects could be achieved by a projection analysis of commentaries like *no wonder*, where the content of the commentary is computed locally and then propagated to the root level of the sentence (Potts 2007). For simple purposes, this may be indeed an attractive alternative, less fraught with philosophical issues. However, the present analysis *derives* this effect from the context orientedness of speaker commentary items, and integrates it with other effects of speaker orientedness, like the use of commentaries in embedded and quantified sentences. As far as I can see, a two-dimensional semantics like Potts' has not yet been linked with recursion and embedding. The present account is the only one which covers *no wonder* or *thank heavens* in embedded and quantified cases. We will turn to these cases in the final subsection.

(iv, v) Quantification under *verba dicendi*.

Let us look at SCIs in embedded speech like in the following examples. My main focus will be on examples with quantified subjects in the matrix clause. These sentences report multiple utterances and, hence, multiple attitudes.

- (51.) *The customers soon found out that their computer had been delivered without battery. Each of them called to complain that, no wonder, his machine wasn't working.*
- (52.) *Each customer confirmed that his computer was SO wonderful.*
- (53.) *Each customer said with relief that, thank heavens, the machine had been delivered in time.*

All examples illustrate multiple comments. We will stick with the *no wonder* example in a simplified version.

(54.) *Each customer complained that, no wonder, his machine wasn't working.*

In order to get the complement of *complain*, we'll compute the shift-diagonals of *his machine wasn't working* and of *no wonder(his machine wasn't working)*

(55.a) $\lambda c. \neg \text{WORK}(\iota x(\text{MACHINE}(x, \text{WORLD}(c)) \wedge \text{OWN}(y, x, \text{WORLD}(c))), \text{WORLD}(c))$

'the set of all contexts where y has one machine in the world of c and this machine does not work in the world of c.'

(55.b) $\lambda c. \text{RUNDERSTAND}(\text{SP}(c), \text{TIME}(c), \text{WORLD}(c), \mathbf{P}(y))$

'the speaker at the time in the world of c has a new, relieved understanding for P(y)'

The proposition commented on is P(y). It depends on the referent of the pronoun 'his' which is treated in the standard way as an open variable which will be resolved to the subject *Each customer* by standard pragmatic reasoning on accessible antecedents in discourse. Eventually, the customer, the speaker SP(c) and the owner of the computer should turn out as the same person. However, this must come about as an automatic effect of the semantic interpretation and not as the result of an invisible hand which identifies the right referents "by magic".

The two diagonals in (55.a) and (55.b) will be intersected. In order to keep formula legible, I use the following abbreviation.

$$\lambda c[\text{MACH-OF } y \text{ NOT WORK IN } c \wedge \text{SP}(c) \text{ NO-WONDERS } \mathbf{P}(y) \text{ IN } c]$$

The matrix verb COMPLAIN takes this set as its argument. The variable y is resolved to the subject, and we get the following semantic representation for (55).

(55.c) $\lambda w. \forall y[\text{CUSTOMER}(y, w) \rightarrow \exists e(\text{COMPLAIN}(y, e, w, \lambda c[\text{MACH-OF } y \text{ NOT WORK IN } c \wedge \text{SP}(c) \text{ NO-WONDERS } \mathbf{P}(y) \text{ IN } c]))]$

(55.c) includes the following pieces of information:

- Each customer issues a complaint.
- It is a complaint of the following content: the machine of that customer y doesn't work, and a speaker attitude about the machine of customer y not working.
- Customer y believes to be the speaker of the complaint, and that the complaint is an utterance context of the given kind.
- Hence, the customer believes that his machine doesn't work, and that he is presently no longer surprised about the fact that his machine doesn't work
- This is what the customer wants to tell his addressee.

One can see nicely how customer and speaker are short-cutted. Given that the owner of the computer and the customer are likewise short-cutted, resolving *his* to *customer*, we finally come down to one involved person. The resulting reading is appropriate.

This analysis maintains the Kaplanian spirit in that we don't quantify over contexts directly, nor over speaker variables or other context parameters directly. In keeping with earlier analyses, reference to utterance context remains outside the "core" semantic operations. Yet, the present analysis allows lambda abstraction over contexts where they affect shiftable indexicals. In terms of logic, context variables c can be bound. In terms of semantics, certain references to the speaker, addressee, time and place can shift. Our logic of contexts mirrors the semantic findings. The formalism can also host other sets of shiftable indexicals in other languages if necessary. The present treatment does not depend on assumptions about the syntactic status or nature of pronominal and indexical elements.¹⁵ This renders the analysis independent of specific versions of syntactic theory; it remains to be seen whether any important syntactic generalizations about shiftable indexicals should be re-integrated in future versions of the account.

The present section recapitulated the five characteristics of speaker commentary items that were introduced at the outset of the paper. It was illustrated how the proposed analysis can account for them in an integrated manner.

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¹⁵ In this, we differ from Sharvit (2008) which proposes a very specific way to establish tacit speaker nodes at LF, using this as a basis to ensure shiftable reference.

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