

Embedding Topic-Comment Structures Results in Intermediate Scope Readings*

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1. Introduction

Nowadays it is widely known that indefinites can take exceptional wide scope out of scope islands. In example (1) from (Ruys 1999) the indefinite *three relatives of mine* can take *exceptionally wide* scope outside the *if*-clause island, yielding a reading roughly paraphrasable as *there are three relatives of mine and if all of them die, I will inherit a fortune*.

(1) *If three relatives of mine die I will inherit a fortune.* [IF \succ 3] [3 \succ IF]

If indefinites can escape scope-islands and take scope wherever they please, one would expect to see them take *intermediate scope*, i.e. scope outside a scope-island but yet below other scope-taking operators. However, this does not seem to be the case, as (Fodor and Sag 1982) argue. They provide (2) as an example where the indefinite *a student* cannot take exceptional wide scope outside the *if*-clause island but below *every professor* (b), although it can take (exceptional) widest scope (c).

(2) *If a student in the syntax class cheats on the exam, every professor will be fired.*

- a. [\forall professor \succ IF \succ \exists student] narrow scope available
- b. [\forall professor \succ \exists student \succ IF] (exceptional) intermediate scope unavailable
- c. [\exists student \succ \forall professor \succ IF] (exceptional) widest scope available

This observation led Fodor and Sag (1982) to propose that indefinites are ambiguous between a quantificational and a referential reading, thus accounting for the observed narrow scope and widest scope reading, respectively. This proposal also predicts that intermediate scope readings are unavailable in general, a view to which Fodor and Sag (1982) subscribe.

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However, sometimes intermediate scope readings (ISRs) *are* available. In the following example from (Ruys 1992) the indefinite contains a bound pronoun such that a widest scope reading is unavailable for binding reasons. But more crucially, this bound pronoun seems to make an intermediate scope reading available.

(3) *Every professor_i will rejoice if a student of his_i cheats on the exam.*

Indeed this observation has led some researchers to conclude that the presence of an overt bound pronoun or the possibility of assuming a covert one is the decisive indicator for an intermediate scope reading (cf. Matthewson 1999, Schwarzschild 2002). But there are yet examples which show that intermediate scope readings are also available in cases where the indefinite does not contain an overt bound pronoun and a covert one cannot plausibly be assumed. The following is a case in point from (Kratzer 1998). (4) also has an intermediate scope (*de re*) reading stating that for everyone of them there is a doctor from the hospital such that he suspected that this doctor is a quack.

(4) *Everyone of them suspected that some (actual) doctor from the hospital was a quack.*

In conclusion, Fodor & Sag's claim that intermediate scope readings do not exist in general has to be dismissed (cf. e.g. Farkas 1981, Ruys 1992, Abusch 1994, Kratzer 1998, and many others). But then again, it is not the case that ISRs do exist in general as Fodor & Sag's seminal (2) shows. Even if the intermediate scope reading is contextually preferred it seems to be unavailable in certain cases, rendering sentences pragmatically odd:

(5) *(Last week, I went to a horse-race every day. It was curious:)*

All horses won all races that took place on some day.

$[\forall \text{ horse } \succ \forall \text{ race } \succ \exists \text{ day}]$	narrow scope	contextually excluded
$[\forall \text{ horse } \succ \exists \text{ day } \succ \forall \text{ race}]$	intermediate scope	unavailable
$[\exists \text{ day } \succ \forall \text{ horse } \succ \forall \text{ race}]$	widest scope	contextually excluded

In (5), the narrow scope and the widest scope reading of the indefinite *some day* is contextually excluded – as every competition usually yields only one winner it is implausible that all horses won all races. The only sensible reading would be the ISR, paraphrasable as *for each horse there was one day such that this horse won all races on that day*. However, the oddity of (5) indicates that this reading does not seem to be available.

The most pressing question raised by these data is obviously: what exactly is it, that is responsible for the (un)availability of ISRs? In this paper we provide an answer to this question that recurs to the information structural notion of *topicality*. We extend the approach of Ebert and Endriss (2004) and Endriss (to appear) and show that ISRs may arise iff a topic-comment structured clause occurs embedded within some semantic operator. Hence ISRs are predicted to be unavailable if no such embedding operator is present, which we will show to be borne out. The focus in this paper lies on an investigation of the nature of these operators, while we keep the discussion on the formal implementation rather brief. The formal aspects are elaborated in more detail in (Ebert et al. 2008).

2. Intermediate Scope vs. Functional Wide Scope

We will first take a closer look at data that illustrate important differences between genuine intermediate scope readings and functional wide scope readings. This distinction between functional and pair-list readings has been important in various other contexts, for instance with questions (Groenendijk and Stokhof 1984, Krifka 2001) and functional relative clauses (Sharvit 1997).

In order to elucidate the respective readings, we will investigate possible continuations of a given scope-ambiguous sentence. The proposal to use this method to distinguish different readings induced by quantifier scope variation has first been proposed by (Groenendijk and Stokhof 1984) and employed in (Endriss to appear, Ebert and Endriss 2006). We will use this method in the following to tease apart functional readings and genuine intermediate scope readings. Each sentence in the following pair contains the same three DPs with the indefinite *some lecturer* occurring in an *if*-clause island. The decisive difference is the presence of the CP-embedding verb *announce* in (6b).

- (6) a. *Every student will leave the party if some lecturer shows up.*
 b. *Every student announced that she will leave the party if some lecturer shows up.*

We observe differences concerning the acceptability of different continuations. While the statement of an individual and the statement of a functional dependence yields a felicitous discourse in both cases, an enumeration of student-lecturer pairs is acceptable only subsequent to (6b).

(7)	Continuation	OK after (6a)?	OK after (6b)?
	<i>Namely, Prof. Humpty</i> (statement of individual)	yes	yes
	<i>Namely, her supervisor</i> (statement of functional dependence)	yes	yes
	<i>For Ann its Prof. Hob, for Mary Prof. Nob, ...</i> (pair list)	no	yes

We take it that these three different types of continuations correspond to different scope readings of the indefinite *some student*. The statement of an individual helps to elucidate the widest scope reading, the statement of a functional dependence a *functional wide scope reading*, and the enumeration of pairs a genuine intermediate scope reading. Hence we conclude from (7) that both sentences in (6) allow for a widest scope/functional wide scope reading, while only (6b) allows for a genuine ISR.

That functional wide scope readings and genuine ISRs are indeed truth-conditionally independent and hence do reflect two distinct readings can be illustrated with examples including non-monotonic quantifiers (cf. Chierchia 2001, Schwarz 2001, Endriss to appear). We conclude that functional wide scope readings and ISRs must be kept apart and hence must be analyzed differently. While in the case of the former an indefinite is interpreted as a function that takes widest scope, an ISR must be analyzed such that the indefinite gen-

usually takes intermediate scope between two other scope operators. We argue in (Ebert and Endriss 2006) that functional wide scope readings exist whenever an ordinary wide scope reading exists and the indefinite can plausibly be reinterpreted as a function, for instance due to the presence of a pronoun or some inherent relational meaning as in the case of nouns like *relative*, *teacher*. Genuine ISRs on the other hand are much more restricted as examples like (6a) illustrate.

In the following we will not go into any more detail on functional wide scope readings, but refer the reader to (Ebert and Endriss 2006) where they are discussed in depth. Instead we will focus on intermediate scope readings and the aspects that restrict their occurrence.

3. Intermediate Scope Readings via Embedded Topics

We base our proposal for the derivation of intermediate scope readings on (Ebert and Endriss 2004, Endriss to appear), where the information structural notion of *aboutness topicality* is the decisive aspect for the existence of *exceptional* wide scope readings, i.e. scope readings where it seems that scope islands are not respected. In the following we can only sketch the formal aspects of our approach (see Ebert et al. 2008, for further detail).

3.1 Embedded Topics

The observation that topical indefinites receive a wide scope/specific/referential interpretation has been made at various places before (cf. Firbas 1966, Cresti 1995, and many others). Ebert and Endriss (2004) and Endriss (to appear) understand topics as sentence topics in the *aboutness* sense of (Reinhart 1981). According to Reinhart’s view (which goes back to Hockett 1958), topics constitute what the sentence is about. They refer to an *individual* / ‘*storage address*’ associated with the information conveyed by the sentence.

Topic-marking, i.e. designation of a constituent as topic, subdivides a clause into topic and comment. This division is captured formally with a *structured meaning* representation (cf. Dahl 1974, Krifka 1992), i.e. a pair of semantic representations such that the first and second component reflect the semantic contributions of the topic and the comment, respectively. The rules for the compositional derivation of these structures are defined in a way such that the semantics of the comment can be applied to the semantics of the topic at any stage, resulting in the ‘standard’ compositional semantics of the respective constituent. We note topic-comment structures in the following form (see (Krifka 1992) for details on the formal definition and compositional derivation of such structures).

$$(8) \quad [\varphi]_{\text{Topic}} [\lambda x[\psi(x)]]_{\text{Comment}}$$

(Endriss to appear) assumes that topic-comment structured clauses are always embedded under some operator. In the ‘standard’ case, where the topic-comment structure exhausts the entire matrix clause, this embedding operator is a silent speech act operator such as ASSERT (Jacobs 1984) for instance. Crucially, topics can also occur in embedded subor-

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dinate clauses, i.e. the subordinate clause is itself structured into topic and comment. Take for instance a CP complement verb such as *announce* in

(9) *Peter announced that John will marry Sue.*

If we take the three DPs as candidates for topic marking, there are various possibilities. First, in the ‘standard’ case, either DP might be the topic of the entire utterance or, more precisely, the speech act. For instance if *John* constitutes the topical constituent in this way, the entire speech act would be an assertion about John, about whom it is asserted that Peter announced that he will marry Sue. This is reflected in the structured meaning representation that we derive for the assertion of (9).

(10) $\text{ASSERT}([\text{john}]_{\text{Topic}}[\lambda x[\text{announce}(\text{peter}, \text{marry}(x, \text{sue}))]]_{\text{Comment}})$

Second, each DP of the embedded CP (i.e. *John* and *Sue*) might be the topic of the embedded clause. If *John* constitutes the topical constituent in this way, the ‘aboutness’ of John would not concern the speech act but the announcement. The entire utterance is then interpreted as an assertion stating that Peter makes an *announcement about John*, namely that he will marry Sue.

(11) $\text{ASSERT}(\text{announce}(\text{peter}, [\text{john}]_{\text{Topic}}[\lambda x[\text{marry}(x, \text{sue})]]_{\text{Comment}}))$

Obviously, not every CP complement verb allows for such an aboutness interpretation and hence for topic-comment structured complements. We will discuss the class of verbs that do allow such structured complements in Section 4. But in the presence of a suitable CP embedding semantic operator (such as *announce*) we are confronted with one of the following situations, depending on the exact form of the topic-comment structure.

- (12) a. $\text{SpeechActOperator}([\dots]_{\text{Topic}}[\dots \text{SemanticOperator}(\dots) \dots]_{\text{Comment}})$
b. $\text{SpeechActOperator}(\dots \text{SemanticOperator}([\dots]_{\text{Topic}}[\dots]_{\text{Comment}}) \dots)$

The schema in (12a) corresponds to (10), where the topic-marked constituent contributes the ‘outermost’ topic of the entire speech act, i.e. the object the speech act is about. The schema in (12b) on the other hand corresponds to (11), where the topic-marked constituent contributes the ‘embedded’ topic of a clausal argument of some semantic operator, i.e. the object the semantic contribution of this operator is about. In the following section we formalize the notion of aboutness topicality and put forth a general topic interpretation scheme that details how topic-comment structures are interpreted w.r.t. their embedding operators.

3.2 Topic Interpretation

Ebert and Endriss (2004) and Endriss (to appear) propose to formalize the concept of ‘*storage address*’ in Reinhart’s aboutness metaphor by a *discourse referent* in the semantic representation which is used further in predication of the information in the comment. They assume that all DPs (including indefinites) denote generalized quantifiers following

Kadmon (1985) w.r.t. to the lexical quantifier semantics. As a generalized quantifier does not *per se* provide a reasonable storage address, i.e. a discourse referent, such a discourse referent must be created for a suitable representative of the generalized quantifier, if the respective quantified DP is marked for topicality. A *minimal witness set* of the quantifier is such a suitable representative (cf. Szabolcsi 1997). Minimal witness sets as defined in (Barwise and Cooper 1981) are those sets of a GQ that, roughly speaking, contain no ‘unnecessary’ elements.

$$(13) \quad \text{MinWit}(G) =_{\text{def}} \{X : G(X) \wedge \forall Y[G(Y) \rightarrow \neg(Y \subset X)]\}$$

For instance, $\text{MinWit}(\llbracket \text{three lecturers} \rrbracket)$ comprises all sets that consist of exactly three lecturers.

According to this view of the aboutness concept, the basic interpretation scheme for a topic-comment structure $[G]_{\text{Topic}} [\lambda \mathcal{G}[\psi(\mathcal{G})]]_{\text{Comment}}$ is formally spelled out in two steps, where we make crucial use of a *dynamic* construal of the involved quantifiers and logical connectives along the lines of e.g. (Groenendijk and Stokhof 1991). First a new discourse referent (i.e. ‘storage address’) for a minimal witness set representative of the topic G is introduced and then this representative stands proxy for G in the application of the comment.

The *Topic Interpretation Scheme* relates these two steps to the operator which embeds the topic-comment structure as explained above. It reflects the natural order that is suggested by the aboutness concept: first, the object which the sentence is about is established, and *then* the sentence conveys further information about this object. In formal terms, the introduction of the discourse referent happens *outside* of the topic-comment structure embedding operator, while the predication of the comment stays inside.

(14) **Topic Interpretation Scheme:**

If $[G]_{\text{Topic}} [\lambda \mathcal{G}[\psi(\mathcal{G})]]_{\text{Comment}}$ is a topic-comment structure and \mathcal{O} is the embedding operator, then

$$\mathcal{O}([G]_{\text{Topic}} [\lambda \mathcal{G}[\psi(\mathcal{G})]]_{\text{Comment}})$$

is interpreted as

$$\exists X[X \in \text{MinWit}(G)] \wedge \mathcal{O}(\psi(X))$$

where the type mismatch of X (of set type) with the argument \mathcal{G} of ψ (of generalized quantifier type) is resolved by a distributive type lift of X to $\lambda P[X \subseteq P]$.

In cases the topic is the ‘outermost’ topic of the matrix clause (as exemplified by the schema in (12) and instantiated by (10)), a speech act operator plays the role of \mathcal{O} in the Topic Interpretation Scheme (14). However, applying the interpretation scheme straightforwardly would yield a result that is not very sensible as such. It would consist of a conjunction of semantic material (the existential quantification of a new discourse referent for the witness representative) with material on the speech act level. Therefore we re-interpret the first part as a separate *speech act of topic establishment* very similar to an act of *referring* (cf. Searle 1969) or *frame setting* (cf. Jacobs 1984) (with the additional introduction of a new discourse referent). We write $\text{REF}_X(G)$ for this speech act and take it to mean that

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the speaker establishes an aboutness topic for a subsequent speech act by introducing a new discourse referent X for a minimal witness set of G . With this re-interpretation topic interpretation becomes

$$(15) \quad \text{REF}_X(G) \ \& \ \text{SpeechActOperator}(\psi(X))$$

in the case where \mathcal{O} is a speech act operator (where we write $\&$ for speech act conjunction, i.e. consecutive performance of speech acts). Note that due to the initial topic establishment, the topic G in effect takes scope over any other scope-taking element in the comment ψ . This is the crucial feature that allows for the derivation of exceptional wide scope readings of indefinites. Consider (1) again, repeated here as (16), where the indefinite occurs in a scope island.

$$(16) \quad \text{If } [three \text{ relatives of mine}]_T \text{ die I will inherit a fortune.}$$

If this assertion is about the *three relatives of mine* mentioned in the antecedent (i.e. if the topic is marked as indicated) the structured meaning representation would be as follows (where we simplify exposition by not fully spelling out the formal representation).

$$(17) \quad \text{ASSERT} \left(\left[[three \text{ relatives of mine}] \right]_{\text{Topic}} \left[\lambda \mathcal{G} . \mathcal{G}[\text{die}] \rightarrow \text{inherit}(I) \right]_{\text{Comment}} \right)$$

According to the Topic Interpretation Scheme (14) (and the re-interpretation in (15)) this representation is interpreted by the two consecutive acts in (18).

$$(18) \quad \text{REF}_X([three \text{ relatives of mine}]) \ \& \ \text{ASSERT}(X \subseteq \text{die} \rightarrow \text{inherit}(I))$$

This corresponds to the exceptional wide scope reading of the indefinite *three relatives of mine* in (16). The common ground is updated with the information that there is a set of three relatives of the speaker such that she inherits a fortune if they die altogether.

3.3 Intermediate Scope Readings

In order to show the semantic effect of interpretation of embedded topic-comment structures, we recur to (6) again. Consider an assertion of (6b). As mentioned before, the only possibility for an exceptional wide scope interpretation of *some lecturer* lies in its status as aboutness topic and hence we assume that it is marked as such. Depending on whether the corresponding topic-comment structure exhausts the entire sentence or only the embedded CP, a representation of an assertion of (6b) patterns with the schemata (12a) and (12b), respectively.

Suppose first that the indefinite is the matrix level topic and hence the topic-comment structure exhausts the entire sentence. In this case, the topic-comment structure representation is an instance of the schema in (12a).

$$(19) \quad \text{ASSERT} \left(\left[[some \text{ lecturer}] \right]_{\text{Topic}} \left(\left[\lambda \mathcal{G} [\forall x [\text{student}(x) \rightarrow \text{announce}(x, \mathcal{G}(\text{show_up}) \rightarrow \text{leave}(x))]] \right]_{\text{Comment}} \right) \right)$$

The Topic Interpretation Scheme derives the following interpretation.

$$(20) \quad \text{REF}_X (\llbracket \text{some lecturer} \rrbracket) \\ \& \text{ASSERT} \left(\forall x [\text{student}(x) \rightarrow \text{announce}(x, X \subseteq \text{show_up} \rightarrow \text{leave}(x))] \right)$$

This is the exceptional widest scope reading for the indefinite: there is a certain lecturer such that every student announced that he leaves if this lecturer shows up. The derivation of this widest scope reading is not any different from the derivation illustrated in (16) – the indefinite functions as the ‘outermost’ topic of a matrix level topic-comment structure.

The more interesting case of (6b) occurs when the topic-comment structure is ‘embedded’ under the CP complement verb *announce*. In this case, the structured representation instantiates (12b): the topic-comment structure is embedded under the semantic operator *announce*.

$$(21) \quad \text{ASSERT} \left(\forall x [\text{student}(x) \rightarrow \right. \\ \left. \text{announced}(x, [\llbracket \text{some lecturer} \rrbracket]_{\text{Topic}} [\lambda \mathcal{G}[\mathcal{G}(\text{show_up}) \rightarrow \text{leave}(x)]]_{\text{Comment}})] \right)$$

The Topic Interpretation Scheme in (14) applies again in the same way as before, but now the crucial operator \mathcal{O} is the semantic operator *announce* instead of the speech act operator *ASSERT* as in the former cases. Hence, the establishment of the topic, i.e. the introduction of the discourse referent for a witness set representative, is not reinterpreted as a separate speech act but enters into the semantics proper.

$$(22) \quad \text{ASSERT} \left(\forall x [\text{student}(x) \rightarrow \right. \\ \left. \exists X [X \in \text{MinWit}(\llbracket \text{some lecturer} \rrbracket)] \wedge \text{announced}(x, X \subseteq \text{show_up} \rightarrow \text{leave}(x))] \right)$$

This is the genuine ISR for the indefinite in (6b): for every student there is a lecturer such that this student has announced that she will leave the party if that lecturer shows up.

In contrast, consider (6a) and assume again that the indefinite *some lecturer* is marked for topicality. In this case, there is no choice as to how exactly the sentence may be structured into topic and comment. As it does not contain any CP complement verb and hence no topic-comment structure embedding operator, the only option is for the topic-comment structure to exhaust the entire sentence. Hence the topic interpretation runs entirely parallel to the corresponding interpretation (19) of matrix level topic for (6b), which amounts to an exceptional widest scope reading for the indefinite. Crucially, this is the only exceptional/island-free scope reading of the indefinite in (6a). In particular, there is no way to derive an intermediate scope reading due to the lack of any topic-comment embedding operator. This explains the contrast we observed in (7), where an intermediate scope reading was elicited by a viable pair-list continuation for (6a) but not for (6b). The absence of a topic-comment embedding operator also accounts for the oddity of (5), which lacks an intermediate scope readings despite its pragmatic preference for such a reading. An ISR does become available in the presence of a topic-comment embedding operator such as *reported*:

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(23) *Of all horses it was reported that they had won all races that took place on some day.*

Again, the availability of the ISR can be elicited by a pair list continuation of (23), which is impossible subsequent to (5). Assuming that the indefinite *some day* is topic-marked, our approach derives a genuine intermediate scope reading if the corresponding topic-comment structure occurs embedded under *reported*: For each horse, there was some day such that it was reported that it had won all races that happened on that day.

In conclusion, we predict that genuine intermediate scope readings are only available in the presence of a topic-comment embedding operator. The data we presented in Section 1 confirm these predictions. The seminal example (2) of Fodor & Sag lacks an ISR due to the absence of any topic-comment embedding operator. For the same reason, (3) lacks a genuine ISR but has a very prominent *functional* wide scope reading (that could be easily mistaken for an ISR) due to the presence of the overt pronoun. And finally, (4) has a genuine ISR because of the presence of the topic-comment embedding operator *suspect*. Currently Cieschinger et al. (in preparation) are undertaking experimental studies which aim at further empirical verification of these predictions.

Our approach is similar in spirit to the proposal of Kratzer (1998). In her view, genuine intermediate scope readings constitute *de re* readings in the context of attitude verbs (such as *suspect*), which come with an additional *res* argument. Furthermore she assumes that some indefinites come with existence presuppositions, which can be accommodated into the *res* argument of the attitude verb if the indefinite occurs in the scope of such a verb. Hence, the availability of ISRs hinges on the presence of a corresponding attitude verb.

4. Topic-Comment Structure Embedding Operators

At this point, it is of obvious interest to know what kind of operators allow for embedding of topic-comment structures and what they have in common. We will compare data on topic-embedding verbs from Japanese and German and then draw some tentative conclusions about the emerging patterns.

4.1 Embedded Topics in Japanese and German

Japanese provides the overt marker *wa* that indicates topicality or contrastivity. Interestingly, some verbs allow for overt topical *wa*-marked DPs *within their CP complements* (Kuroda 2005).

- (24) a. John wa Mori-san wa Toyota no syain de aru to omotte-iru.
John WA Mori-san WA Toyota of employee be that think-be
'John believes that Mori-san is an employee of Toyota.'
- b. John wa Mori-san wa Toyota no hira-syain de aru koto o zannen ni
John WA Mori-san WA Toyota of flat-employee be that regret
omotte-iru.
think-be
'John regrets that Mori-san is a mere employee of Toyota.'

In order to set the contrastive interpretation apart from the topic interpretation of the *wa* marker, Kuroda (2005) distinguishes two types of embedded contexts. In ‘*non-statement-making contexts*’ the *wa* marked constituent can only receive a contrastive interpretation (hence *wa* indicates contrastivity) while in ‘*indirect speech contexts*’ no such contrastive interpretation (nor an exhaustive listing reading on *ga*) is enforced. In these latter context *wa* is thus regarded as indicating topicality. Now (Kuroda 2005, pp. 19f.) observes that (24b) only has a contrastive interpretation and hence constitutes a ‘*non-statement-making context*’ whereas (24a) is an instance of an ‘*indirect speech context*’ and hence of embedded topical *wa* marking. Crucial for us are the different verbs that create these embedded contexts: *believe* in (24a) yields an embedded ‘*indirect speech contexts*’ that allows for topical *wa* marking, while *regret* does not.

In German, *dass* complement clauses standardly occur in verb final word order.

- (25) Mia glaubt/vermutet/kündigt an/berichtet/bedauert, dass Pit nach Hause **geht**.
 Mia believes/suspects/announces/reports/regrets that Pit to home goes.
 ‘*Mia believes/suspects/announces/reports/regrets that Pit is going home.*’

However, some verbs allow for V2 clauses in the same position, while others do not (see Truckenbrodt 2006, and citations therein).

- (26) Mia glaubt/vermutet/kündigt an/berichtet/*bedauert, Pit **geht** nach Hause.
 Mia believes/suspects/announces/reports/regrets Pit goes to home.
 ‘*Mia believes/suspects/announces/reports/regrets that Pit is going home.*’

Comparing the two verbs *believe* vs. *regret*, we see that the former allows for both embedded topical *wa*-marking and V2 embedding while the latter allows for neither. Preliminary questionnaire studies show that also other verbs such as *say* and *want* pattern with *believe* and *regret*, respectively¹. Interestingly, the difference between *believe/regret* is also observable w.r.t. intermediate scope readings.

- (27) a. *Every pupil believes that the outing will be called off if one teacher falls ill.*
 b. *Every pupil regrets that the outing will be called off if one teacher falls ill.*

While a pair list continuation is possible for (27a) it is impossible for (27b)². Hence, a genuine ISR is available for (27a), but not for (27b). This suggests that the corresponding classes of verbs are related: verbs that allow for embedded topical *wa*-marking in Japanese, verbs that allow for V2 complement clauses, and verbs that allow for intermediate scope readings seem to form the same class.

Unfortunately, this match is not perfect. According to Kuroda (2005)³, *know* patterns with *believe* in Japanese w.r.t. embedded *wa*-marking. In (28) the *wa*-marked con-

¹We are grateful to Yurie Hara, Shinichiro Ishihara, and Kimiko Nakanishi for their judgements and their help in setting up the questionnaire.

²Note that we observe the same contrast with *doubt* in place of *regret*, which indicates that an explanation cannot be based on factivity alone.

³and Kimiko Nakanishi (p.c.), but contra Shinichiro Ishihara (p.c.)

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stituent is not necessarily interpreted contrastively. Thus this example constitutes an instance of an ‘*indirect speech context*’ and hence of embedded topic marking.

- (28) John wa Mori-san wa Toyota no syain de aru koto o sitte-iru.
John WA Mori-san WA Toyota of employee be that know-be
‘*John knows that Mori-san is an employee of Toyota.*’

However, *know* patterns with *regret* according to Truckenbrodt (2006) w.r.t. embedded V2 complements in German. He argues that *know* only seemingly allows for V2 complements and that examples like the following constitute *half-statement readings* in fact.

- (29) Peter weiß: Jan geht nach Hause.
Peter knows: Jan goes to home
‘Peter knows that Jan is going home.’

4.2 Embedded Assertions

It has been noted at several places that predicates that embed V2 show some resemblance to *assertions* (see Truckenbrodt 2006, and references therein). For instance, Gärtner (2002) argues that embedded V2 clauses have *assertive proto-force*. Meinunger (2006) observes that verbs that license embedded V2 allow root transformations in English.

- (30) a. *He **believed/said** that never in his life had he been treated like that.*
b. **Peter **regrets** that never in his life had he been there.*

Crucially, embedded clauses have to be *assertions* in order for root transformations to be applicable (Hooper and Thompson 1973).

Further support for the assertive character of V2 complements comes from the felicitous use of so-called *downtoners* such as *wohl* in German. According to Krifka (2004) downtoners are interpreted on the level of speech acts and lower the strength of the commitment of the speaker who performs an assertion.

- (31) *Peter wonders about a allegedly forthcoming party and notices that people are making preparations.*

Peter: ‘Die Party findet wohl statt.’
the party takes.place WOHL.

Peter communicates by the use of *wohl* that he commits to the truth of the assertion (*the party takes place*) to a lesser than usual degree. Instead of a standard assertion, he effectively performs only a ‘WOHL-assertion’, i.e. an assertion with a lowered speaker commitment. Supporting the observation that embedded V2 complements resemble assertive speech acts, the downtoner *wohl* can occur in such V2 complements (of e.g. *sagen* (say) or *glauben* (believe)).

- (32) Peter: ‘Paul sagt / glaubt, die Party findet wohl statt.’
Paul says / believes the party takes.place WOHL.

Here, the downtoner seems to weaken the commitment of the subject of the V2 embedding operator. In (32) Peter communicates that Paul commits to the truth of *the party takes place* to a lesser than usual degree. Crucially, downtoners are odd in the complements of verbs that do not allow for embedded V2 complements such as *regret*.

- (33) ??Paul bedauert, dass die Party wohl stattfindet.
Paul regrets that the party WOHL takes.place

This gives further evidence for the observation that V2 complements are assertive in character. We conclude that this assertive character is the decisive feature for ISRs to arise. Assertions can be structured into topic (the object the assertion is about) and comment. Since V2 complements are assertive in character, they are likely candidates for embedded topic-comment structures and hence the verbs allowing for V2 complements are likely candidates for topic-comment embedding operators. This is supported by the observation that V2 complement verbs seem to allow also for V2 complements with *left dislocated* constituents. In left dislocation constructions, a constituent appears at the left edge of a clause and is picked up by a correlated resumptive pronoun (RP) in the matrix clause.

- (34) Mia glaubt/hat erzählt, **der Pit, der** kommt heute abend.
Mia believes/has reported the Pit RP comes today evening.
‘Mia believes/has reported that Pit will be there this evening.’

Crucially, Frey (2004) argues that left dislocation is a syntactic strategy for topic marking in German, i.e. the left dislocated constituent constitutes the aboutness topic of the corresponding clause. Therefore (34) clearly indicates that also *glauben* (*believe*) and *erzählen* (*report*) allow for embedded topic-comment structures, similar to their Japanese counterparts where this insight has been gained by investigation of *wa* marking.

If we are right and the assertive character is the decisive commonality of the verbs under discussion, the possible underlying generalization for topic interpretation could be that *topics take scope over the (proto-)assertion they are embedded in*. If this assertion is the outermost speech act operator, a widest scope reading of the topic arises. If the assertion is embedded, a genuine ISR arises. And if the sentence contains no V2-complement verb that could possibly embed an assertion, an ISR is unavailable.

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