

# A modal analysis of expressive meaning: German ‘ja’ under quantifiers

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Workshop on Implicature and Conversational Meaning  
ESSLI 16, Nancy, France  
August 20, 2004

## Goals of this talk:

- analyze the semantic interaction of the German discourse particle ‘ja’ with quantifiers;
- characterize the contribution of ‘ja’ as a *presupposition*;
- explain its peculiar projection and accommodation properties in a dynamic semantic framework;
- discuss the implications of this account for the standard dynamic theory of presupposition projection;

## 1 Preliminaries

### Some irrelevant uses of German *ja*:

- affirmative answer to ‘yes/no’ questions:

- (1) a. Gehen wir essen?  
*go we eat*  
Shall we go out to eat?
- b. Ja.  
*yes*  
Yes.

- emphatic particle in imperatives (always stressed):

- (2) a. Geht **ja** nicht in den Wald!  
*go JA not in the wood*  
Don’t go into the wood!
- (3) a. Mach’ **ja** deine Hausaufgaben!  
*do JA your homework*  
Do you homework!

- in exclamative sentences:

- (4) Das ist ja interessant!  
*this is JA interesting*  
Now that’s interesting!

(Lindner, 1991)

**The relevant use:** in declaratives:

- (5) Fritz kommt immer etwas später zum Kegeln, weil er ja seine Katzen zu  
*Fritz comes always a bit later to the bowling because he JA his cats to*  
 versorgen hat. (Lindner, 1991)  
*look after has*  
 Fritz always gets to the bowling a bit late because he has got his cats to look after.

**Previous accounts:**

- Lindner (1991): “In using MP [modal particle — SK] *ja* the speaker indicates that in his/her eyes the proposition *p* is not controversial” (p. 174).
- Kratzer (1999, 2004): ‘*ja(p)*’ is interpreted on two tiers.  
*Descriptive* meaning: *p*  
*Expressive* meaning: *p* is true and might be known to the addressee (1999)  
*p* is part of shared knowledge or verifiable on the spot (2004)

## 2 Data

### 2.1 Universal quantification

- (6) Jeder dieser Arbeiter verlor seinen Job, weil er in der Gewerkschaft war.  
*each of these workers lost his job because he in the union was*  
 Each of these worker lost his job because he was in the union.  
 > All (of these) workers were in the union.
- (7) Jeder dieser Arbeiter verlor seinen Job, weil er ja in der Gewerkschaft war.  
 Each of these worker lost his job because he was JA in the union.  
 >> All (of these) workers were in the union.

- (7) is only felicitous if it is common knowledge that all workers were in the union. I will call this a (pragmatic) *presupposition*.
- This condition is absent in (6).

- Kratzer (1999) claims that (7) is ill-formed, but I disagree with the judgment.
- It has been claimed that ‘*A because B*’ presupposes *B* (Lagerwerf, 1998). Indeed, ‘*because*’ does trigger certain presupposition-like effects; see below. In any case, there is an intuitive difference: The presupposition in (7) is “stronger” and harder to accommodate. This will be made precise below.

## 2.2 Existential quantification

- (8) Einer dieser Arbeiter verlor seinen Job, weil er in der Gewerkschaft war.  
*one of these workers lost his job because he in the union was*  
 One of these workers lost his job because he was in the union.  
 > A worker was in the union.
- (9) Einer dieser Arbeiter verlor seinen Job, weil er ja in der Gewerkschaft war.  
 One of these worker lost his job because he was JA in the union.  
 ≫ All (of these) workers were in the union.

- (9), just like (7), presupposes that *all* workers were in the union.
- This condition is absent in (8).

- It is often claimed that (8) presupposes that a worker was in the union. As with (6), I doubt that this should be called a presupposition. But in any case, no universal presupposition is projected.

## 2.3 Proper names

- (10) Fritz verlor seinen Job, weil er in der Gewerkschaft war.  
*Fritz lost his job because he in the union was*  
 Fritz lost his job because he was in the union.  
 > Fritz was in the union.
- (11) Fritz verlor seinen Job, weil er ja in der Gewerkschaft war.  
 Fritz lost his job because he was JA in the union.  
 ≫ Fritz was in the union.

- (11) does not carry a universal presupposition (unlike 7 and 9).
- Not surprisingly, neither does (10).

## 2.4 Context dependence

The following summarize the observations so far about quantifiers and proper names. Consider the contexts in (12) and (13).

- (12) Genau die Hälfte der Arbeiter war in der Gewerkschaft.  
*exactly the half of the workers was in the union*  
 Exactly half of the workers was in the union.
- #Jeder Arbeiter verlor seinen Job, weil er (ja) in der Gewerkschaft war.
  - Ein Arbeiter verlor Job, weil er (#ja) in der Gewerkschaft war.
  - Fritz verlor seinen Job, weil er (#ja) in der Gewerkschaft war.
- (13) Alle Arbeiter waren in der Gewerkschaft.  
*all workers were in the union*  
 All workers were in the union.
- Jeder Arbeiter verlor seinen Job, weil er (ja) in der Gewerkschaft war.
  - Ein Arbeiter verlor seinen Job, weil er (ja) in der Gewerkschaft war.
  - Fritz verlor seinen Job, weil er (ja) in der Gewerkschaft war.

- (12a) is infelicitous with or without ‘ja’.
- (12b,c) are bad with ‘ja’, but good without it.
- (13a–c) are fine with or without ‘ja’.

- (12a,b) do become acceptable with ‘*Jeder/Einer dieser Arbeiter*’ ‘each/one of these workers’. These NPs, owing to the definiteness of ‘*diese Arbeiter*’ ‘these workers’, favor an implicitly restricted interpretation relative to only those workers that were in the union.

## 2.5 Cross-sentential anaphora

- (14) Einer dieser Arbeiter verlor seinen Job. Er war in der Gewerkschaft.  
*one of these workers lost his job he was in the union*  
 One of these workers lost his job. He was in the union.
- (15) Einer dieser Arbeiter verlor seinen Job. Er war JA in der Gewerkschaft.  
 One of these workers lost his job. He was JA in the union.  
 >> All (of these) workers were in the union.

- The sequence in (15) behaves just like the single sentence in (9).
- (14) carries no presupposition whatsoever.

- The latter fact suggests that what presupposition there is in (8) is due to ‘because’.

## 2.6 Relative clauses

As in English, German relative clauses can have either restrictive or non-restrictive readings. Unlike in English, they are not distinguished orthographically. Here, the difference is indicated with commas in the English translation.

- (16) Ein Arbeiter, der seine Frau liebte, verlor seinen Job.  
*a worker who his wife loved lost his job*  
 a. ✓A worker, who loved his wife, lost his job. [non-restrictive]  
 b. ✓A worker who loved his wife lost his job. [restrictive]  
 >> Some workers were married and loved their wives.
- (17) Ein Arbeiter, der JA seine Frau liebte, verlor seinen Job.  
 a. ✓A worker, who JA loved his wife, lost his job. [non-restrictive]  
 >> All (of these) workers were married and loved their wives.  
 b. ✗A worker who JA loved his wife lost his job. [restrictive]

- (17a) has again a universal presupposition. The reading in (17b) is unavailable.
- (16a) presupposes nothing; (16b) presupposes that the restriction is non-empty.

- The observations on (16) are unsurprising.
- Notice also that the presupposition of (17) is not ‘*all workers who were married loved their wives*’. That *x* is married is presupposed by ‘*x loved his wife*’. This presupposition becomes part of the meaning contributed by ‘ja’.

## 3 Questions to be addressed

Q: Can these observations be explained by extending the standard account of ‘ja’ to the quantificational case?

A: Yes.

Q: Is the contribution of ‘ja’ a presupposition? If so, how does ‘ja’ differ from “ordinary” triggers?

A: The traditional dynamic analysis of presupposition projection works better for ‘ja’ than for those cases for which it was designed. We may need a new analysis for the latter.

Q: Is the contribution of ‘ja’ expressive meaning?

A: That depends on what “expressive meaning” is.

## 4 Formal background

The account is based on a dynamic modal logic, partly inspired by Groenendijk et al. (1996), with explicit representations of interlocutors’ beliefs about the common ground.

**Basic elements:** three disjoint non-empty sets:

$W$ : possible worlds

$D$ : individuals, common to all possible worlds

$\mathbb{X}$ : potential discourse referents

**Possibilities:** pairs of worlds and partial assignment functions (from some set  $X$  of *active* discourse referents to individuals).

$$I = \{\langle w, g \rangle \mid w \in W, g \in D^X, X \subseteq \mathbb{X}\}$$

**Referent activation:** A relation  $[x]$  between possibilities is defined for each referent  $x \in \mathbb{X}$ . Two possibilities  $\langle w, g \rangle, \langle w', g' \rangle$  stand in relation  $[x]$  iff

- they share the same world  $[w = w']$
- $x$  is not active in  $\langle w, g \rangle$   $[x \notin \text{dom}(g)]$
- $x$  (alone) is activated in  $\langle w', g' \rangle$   $[\text{dom}(g') = \text{dom}(g) \cup \{x\}]$
- already active referents are not reassigned  $[g'(x') = g(x') \text{ for all } x' \in \text{dom}(g)]$

- I assume for simplicity that the set of active discourse referents is shared between interlocutors, and quantifiers always activate fresh referents. Thus I avoid the use of referent systems and “pegs” (Groenendijk et al., 1996).

**Belief states:** A belief state is an accessibility relation  $B$  between possibilities that is consistent and introspective.

- More specifically,  $B \subseteq I \times I$  has the following properties (for all  $i$ ), with the corresponding axioms about the agent’s beliefs:
  - Serial: For some  $j$ ,  $iBj$ .
  - Consistency:  $\neg \Box_B(\varphi \wedge \neg \varphi)$
  - Transitive: For all  $j$  such that  $iBj$ ,  $B(j) \subseteq B(i)$ .
  - Positive introspection:  $\Box_B \varphi \Rightarrow \Box_B \Box_B \varphi$
  - Euclidean: For all  $j$  such that  $iBj$ ,  $B(i) \subseteq B(j)$ .
  - Negative introspection:  $\neg \Box_B \varphi \Rightarrow \Box_B \neg \Box_B \varphi$

With these properties, the set of accessible possibilities is guaranteed to be a non-empty equivalence class. Informally: The speaker is fully aware of his beliefs, and if any of his beliefs are false, he doesn’t realize it. See Fagin et al. (1995); Stalnaker (2002) for more.

**Update:** The interpretation  $\llbracket \varphi \rrbracket$  of a sentence  $\varphi$  is a function from belief states to belief states. ‘ $B\llbracket \varphi \rrbracket$ ’ the result of updating  $B$  with  $\varphi$ .

- For sentences without quantifiers, update proceeds by elimination of links from the accessibility relation.
- Update with the existential quantifier is not eliminative:  $B\llbracket \exists x \rrbracket$  is a new belief state just like  $B$ , except that  $x$  has been *activated* and *randomly assigned* to individuals.
- Conjunction is interpreted as composition:  $i(B \circ [x])j$  iff for some  $k$ ,  $iBk$  and  $k[x]j$ . I write ‘ $B(\llbracket \varphi \rrbracket \circ \llbracket \psi \rrbracket)$ ’ instead of ‘ $\llbracket \psi \rrbracket(\llbracket \varphi \rrbracket(B))$ ’.

– A link  $\langle i, j \rangle$  *subsists* in  $B$  iff for some  $k$ ,  $iBk$  and there is a sequence of zero or more discourse referents  $x_1, \dots, x_n$  such that  $j([x_1] \circ \dots \circ [x_n])k$ .

Thus  $j$  and  $k$  share the same world and assignment function (where defined for both), and differ at most in that  $k$  has additional active discourse referents.

- Update:  $B\llbracket P(t_1, \dots, t_n) \rrbracket = \{ \langle i, i' \rangle \in B \mid \langle g_{i'}(t_1), \dots, g_{i'}(t_n) \rangle \in w_{i'}(P) \}$   
 $B\llbracket \neg \varphi \rrbracket = \{ \langle i, i' \rangle \in B \mid \langle i, i' \rangle \text{ does not subsist in } B\llbracket \varphi \rrbracket \}$   
 $B\llbracket \exists x \rrbracket = (B \circ [x]) \cup \{ \langle i', j' \rangle \mid \text{for some } \langle i, j \rangle \in B, i[x]i' \text{ and } j[x]j' \}$   
 $\llbracket \varphi \wedge \psi \rrbracket = \llbracket \varphi \rrbracket \circ \llbracket \psi \rrbracket$

$$\begin{aligned} \text{Also: } \llbracket \varphi \rightarrow \psi \rrbracket &= \llbracket \neg(\varphi \wedge \neg \psi) \rrbracket \\ \llbracket \varphi \vee \psi \rrbracket &= \llbracket \neg(\neg \varphi \wedge \neg \psi) \rrbracket \\ \llbracket \forall x(\varphi \rightarrow \psi) \rrbracket &= \llbracket (\exists x \wedge \varphi) \rightarrow \psi \rrbracket \end{aligned}$$

- $w_i(P^n) \subseteq D^n$  for  $n$ -ary predicates; proper names are treated DRT-style, as predicates.
- After update with  $\llbracket \exists x \rrbracket$ , the prior possibilities are “out of sight”: The agent believes that  $x$  is activated.
- The second part of the definition for  $\exists x$  “reconnects” the newly accessible possibilities after activation of  $x$ . Thus the factual beliefs in  $B$  are preserved under referent activation.

**Belief:** A sentence  $\varphi$  is believed in  $B$ , written ‘ $[B]\varphi$ ’, iff  $B\llbracket \neg \varphi \rrbracket$  is not serial (i.e., inconsistent).

**Common ground:** For speaker  $s$  and listener  $\ell$  with beliefs  $B_s$  and  $B_\ell$ , respectively, the common ground is the transitive closure of  $B_s \cup B_\ell$ .

**Speaker presupposition:** The speaker presupposes  $\varphi$  iff (s)he behaves as if (s)he believed that  $\varphi$  is commonly believed (i.e., as if  $[B_s][B_s, \ell]\varphi$  were true).

- $i_1 B_{s, \ell} i_n$  iff there is a sequence  $i_1, \dots, i_n$  with  $i_m B_s i_{m+1}$  or  $i_m B_\ell i_{m+1}$  for all  $m$  with  $1 \leq m < n$ .
- The common ground will be serial and transitive, but it is only Euclidean if  $s$  and  $\ell$  hold mutually compatible beliefs (i.e., if the sets of possibilities accessible via  $B_s$  and  $B_\ell$  have a non-empty intersection).
- The definition of speaker of presupposition is due to Stalnaker (1974 and elsewhere).
- With Stalnaker, I believe that the *actual* common ground is of little if any use in understanding speakers’ behavior.

## 5 Explaining the data

Consider (9), repeated here as (18). Let ‘ $\varphi$ ’ represent the clause containing *ja*, and let ‘ $ja(\varphi)$ ’ be the result of composing *ja* with  $\varphi$ . Furthermore, let  $B'_\ell$  be the belief state of  $\ell$  after update of  $B_\ell$  with  $\llbracket \exists x \rrbracket \circ \llbracket \text{worker}(x) \rrbracket$ . (Never mind what happened to  $\llbracket \text{lost-job}(x) \rrbracket$ .)

- (18) Einer dieser Arbeiter hat seinen Job verloren, weil er ja in der Gewerkschaft war.  
*one of these workers has his job lost because he JA in the union was*  
 One of these workers lost his job because he was JA in the union.  
 $\gg$  All (of these) workers were in the union.

**Main claim:** In using ‘ $ja(\varphi)$ ’, the speaker presupposes  $\varphi$ .

In (18), the speaker indicates that he takes  $\varphi$  to be already in the common ground:

*‘I (the speaker) know that we both know that  $x$  was in the union’.*

In order for  $s$  to have this belief, he has to assume that after the update with  $\llbracket \exists x \rrbracket \circ \llbracket \text{worker}(x) \rrbracket$ ,  $\ell$  does not entertain the possibility that  $x$  refers to an individual who was not in the union. But in order for  $K_\ell$  to already rule this out,  $\ell$  must have believed beforehand that all workers were in the union.

### 5.1 Consequence: Non-accommodability

Suppose  $\ell$  did not already know that  $x$  was in the union and wants to accommodate the presupposition. What should she do?

**Update  $B'_\ell$  with  $\varphi$ ?** This will indeed make it common belief that  $x$  was in the union. But it does not resolve the disagreement over the common ground: It fails to remove those possibilities in which a different worker not referred to by  $x$  was not in the union.

**Update  $B'_\ell$  with  $[B_s]\varphi$ ?** This can be done, but notice that this update would not align the beliefs of  $s$  and  $\ell$ : The disagreement over the common ground remains.

**Update  $B'_\ell$  with  $[B_{s,\ell}]\varphi$ ?** That is, remove from  $B'_\ell$  all links  $\langle i, i' \rangle$  such that for some  $i'', i' B_{s,\ell} i''$  and  $\varphi$  is false at  $i''$ . This leads to inconsistency:  $B_{s,\ell}$  contains  $B'_\ell$ , and  $\ell$  does not already believe  $\varphi$ .



**Better:** If  $\ell$  trusts  $s$  and wants to fully resolve the discrepancy, she must fix her beliefs in such a way that the update with  $\llbracket \exists x \rrbracket \circ \llbracket \text{worker}(x) \rrbracket$  *would have* led her to conclude that  $x$  was in the union.

- This requires a *post-hoc* update with the information that all workers were in the union.
- But the speaker only said that (he believes she knows) that  $x$  was.

$\Rightarrow$  To figure this out,  $\ell$  needs some complex reasoning about the way the speaker’s beliefs about her beliefs motivated his use of ‘ja’.

**Alternatively:**  $\ell$  may accept  $\varphi$  but reject  $s$ ’s claim that  $\varphi$  was already inferable. This need not disrupt the conversation, but the disagreement over the common ground will persist.

## 5.2 Without ‘ja’

Consider again (8), repeated as (19).

- (19) Einer dieser Arbeiter hat seinen Job verloren, weil er in der Gewerkschaft war.  
*one of these workers has his job lost because he in the union was*  
 One of these workers lost his job because he was in the union.

- The speaker of (19), does not presuppose (in the above sense) that  $x$  was in the union.
- The listener may simply update  $B_\ell$  with  $\varphi$ . It is then common belief that  $x$  was in the union, though not that all workers were. There is no problem here because the speaker gives no indication that he thinks so, either.

## 6 Semantic and pragmatic presuppositions

It is time to address the famous sentence (20) by Heim (1983):

(20) A fat man was pushing his bicycle.

➤ Every fat man had a bicycle.

- ‘*x pushed his bicycle*’ presupposes ‘*x had a bicycle*’.
- Why doesn’t (20) presuppose that every fat man had a bicycle?

- Heim gives (20) the kind of treatment that is right for ‘ja’. But it is wrong for semantic presuppositions.

### 6.1 Solution: Speaker’s reference

I will only give a brief semi-formal description of the account. It is inspired by Kadmon (1990); Stanley and Gendler-Szabó (2000); van Rooy (2001); Schwarzschild (2002).

**Idea:** In using (20), the speaker indicates that he believes  $\varphi$ .

At the time the speaker introduces the discourse referent, he knows that he is using it to refer to a man with a bicycle. But he also knows that the listener does not know that.

**Possibilities:** triples of worlds, assignment functions, and *restriction* functions, recording, for each discourse reference, the restriction intended by the speaker who introduced it.

$I = \{ \langle w, g, r \rangle \mid \langle w, g \rangle \text{ is a possibility as before, and } r : \text{dom}(g) \mapsto (W \mapsto \wp(D)) \text{ assigns properties to active discourse referents} \}$

**Referent activation:** The relation  $[x]$  is redefined:  $\langle w, g, r \rangle [x] \langle w', g', r' \rangle$  iff

- $\langle w, g \rangle [x] \langle w', g' \rangle$  according to the earlier definition;
- $x \notin \text{dom}(r)$ ;
- $\text{dom}(r') = \text{dom}(r) \cup \{x\}$ ;
- $r'(x') = r(x')$  for all  $x' \in \text{dom}(r)$ ;
- the individual assigned to  $x$  is in the extension of the restriction:  $g'(x) \in r'_x(w)$ .

**Update:** The introduction of a new discourse referent into a belief state is sensitive to the restriction:

$B[\exists x] = (B \circ [x]) \cup \{ \langle i', j' \rangle \mid r_{i'} = r_{j'} \text{ and for some } \langle i, j \rangle \in B, i[x]i' \text{ and } j[x]j' \}$

**Main point:** The belief state resulting from this update is not Euclidean *unless*  $r$  is constant across all accessible possibilities.

The speaker knows  $r$ , hence he believes that  $x$  has all properties entailed by  $r$ .

The listener doesn’t know  $r$ , and the speaker knows that too.

## 7 Back to the data

**Universal quantification:** We can now characterize the intuitive difference between (21) and (22): The presupposition is stronger in the latter than in the former.

- (21) Jeder dieser Arbeiter hat seinen Job verloren, weil er in der Gewerkschaft war.  
*each of these workers has his job lost because he in the union was*  
 Each of these workers lost his job because he was in the union.  
 > All (of these) workers were in the union.

- (22) Jeder dieser Arbeiter hat seinen Job verloren, weil er ja in der Gewerkschaft war.  
*each of these workers has his job lost because he JA in the union was*  
 Each of these workers lost his job because he was JA in the union.  
 >> All (of these) workers were in the union.

- In (21), the speaker indicates that he (believes that he) is using  $x$  to refer to a worker who was in the union.
- In (22), he indicates that he takes this to be already commonly believed.

**Relative clauses:** Consider (16) and (17), repeated here as (23) and (25).

- (23) Ein Arbeiter, der seine Frau liebte, verlor seinen Job.  
*a worker who his wife loved lost his job*  
 a. ✓A worker, who loved his wife, lost his job. [non-restrictive]  
 b. ✓A worker who loved his wife lost his job. [restrictive]  
 >> A worker was married and loved his wife.

I assume that the restrictive relative clause is inserted in the sequence of updates at the point at which it occurs in the sentence. However, ‘ $x$  loved his wife’ presupposes that  $x$  is married. An update during which this presupposition is accommodated will take the following form:

$$[[\exists x]] \circ [[\text{worker}(x)]] \circ [[x \text{ was married}]] \circ [[x \text{ loved his wife}]] \circ [[x \text{ lost his job}]] \quad (24)$$

This holds for both (23a) and (23b). The difference (the relative clause is a “comment” by the speaker in (23a)) has no consequences for the outcome. Not so in (25):

- (25) Ein Arbeiter, der JA seine Frau liebte, verlor seinen Job.  
 a. ✓A worker, who JA loved his wife, lost his job. [non-restrictive]  
 b. ✗A worker who JA loved his wife lost his job. [restrictive]  
 >> All (of these) workers were married and loved their wives.

Similarly to the case of the existential quantifier, the sentence presupposes that it is already known that  $x$  loved his wife by the time the clause is processed.

## 8 Discourse relations

The presupposition induced by *ja* depends on the discourse relation (explanation, sequence, etc.; cf. Kehler, 2002; Asher and Lascarides, 2003; Webber et al., 2003) in some as-yet ill-understood way.

- (26) Jeder dieser Arbeiter verlor seinen Job, weil er ja seinen Chef verpiffen hatte.  
*Each of these workers lost his job because he JA his boss bewhistled had*  
 Each of these workers lost his job because he had blown the whistle on his boss.  
 >> All (of these) workers blew the whistle on their bosses.

The presupposition that all workers blew the whistle on their bosses is not present in (27)

- (27) Jeder dieser Arbeiter verpiff seinen Chef und verlor daraufhin seinen Job.  
*each of these workers bewhistled his boss and lost thereupon his job*  
 Each of these workers blew the whistle on his boss and lost his job as a result.  
 >> ∅

However, with *ja* in the last clause as in (28), the presupposition is again present. Most importantly, however, unlike in (26), the presupposition is not that all workers lost their jobs!

- (28) Jeder dieser Arbeiter verpiff seinen Chef und verlor ja daraufhin seinen Job.  
 Each of these workers blew the whistle on his boss and lost JA his job as a result.  
 >> All (of these) workers who blew the whistle on their bosses lost their jobs.  
 >>> All (of these) workers lost their jobs.

Similarly with existential quantification:

- (29) Einer dieser Arbeiter verpiff seinen Chef und verlor daraufhin seinen Job.  
*one of these workers bewhistled his boss and lost thereupon his job*  
 One of these workers blew the whistle on his boss and lost his job as a result.  
 >> ∅
- (30) Einer dieser Arbeiter verpiff seinen Chef und verlor ja daraufhin seinen Job.  
 One of these workers blew the whistle on his boss and lost JA his job as a result.  
 >> All (of these) workers who blew the whistle on their bosses lost their jobs.  
 >>> All (of these) workers lost their jobs.

Q: Why does (26) not convey that all workers *who lost their jobs* had blown the whistle on their bosses?

i.e., why doesn't ‘*x lost his job*’ make it into the restriction of the quantifier?

A: I can only speculate. It apparently has to do with ‘*weil*’ ‘because’ or temporal order.

## 9 Conclusion

**German ‘ja’:** I gave a precise and (I think) plausible analysis of the interaction of German ‘ja’ with quantifiers.

**Presupposition:** From the perspective of the classical dynamic theory of presupposition projection, the import of German ‘ja’ is a presupposition *par excellence*. More specifically, a speaker (or pragmatic) presupposition in Stalnaker’s sense.

**Implications:** This raises the question of how ordinary presupposition triggers differ from ‘ja’. I offered an account in terms of a difference in the speaker’s commitments. Ordinary presuppositions do not have to be satisfied in the common ground and can (usually) easily be accommodated. The formal implementation of this idea requires a departure from common assumptions about presuppositions.

**Expressive meaning:** If the contribution of ‘ja’ is to be expressive meaning, we have to conclude that expressive meaning overlaps with pragmatic presupposition. If there is to be no such overlap, then the notion of “expressive meaning” should be redefined.

**Discourse relations:** German ‘ja’ offers some insights into the way in which the dynamic interpretation of sentence is constrained by semantic factors, such as discourse relations and/or temporal relations, not just the order in which the clauses are presented. There is much room for further work in this area.

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