

***On the interpretations of embedded questions in German***

*Kerstin Schwabe & Robert Fittler*

*ZAS Berlin & FU Berlin*

*schwabe@zas.gwz-berlin.de*

*RobertFittler@netscape.net*

# 1 Introduction

## 1.1 Force of consistency conditions

- Consistency conditions (among other things) determine the clause type of the complement clause
  - Declarative
    - **dass-form**  
*F glaubt, dass M kommt.*  
'F believes that M is coming'
  - Interrogative
    - **ob-form**  
*F fragt, ob M kommt.*  
'F asks whether M is coming'
    - **wh-form**  
*F fragt, wer kommt.*  
'F asks who is coming'

# 1 Introduction

## 1.2 ob-form

- (1) a. *F fragt, ob M kommt.*  
F asks whether M is coming
- b. *F hört, ob M kommt.*  
F hears whether M is coming'
- c. *F bedenkt, ob M kommt.*  
F considers whether F is coming'
- d. *F hört davon, ob M kommt*  
F hears da-about whether M is coming'

# 1 Introduction

## 1.2 ob-form

- **external ob-form**      *wissen 'know', hören 'hear', ...*      [\(1b\)](#)  
A verb whether  $\sigma \Leftrightarrow$  (A verb that  $\sigma \vee$  A verb that  $\neg\sigma$ )
- **internal ob-form A**      *bedenken 'consider'*      [\(1c\)](#)  
A verb whether  $\sigma \Leftrightarrow$  A verb that  $(\sigma \vee \neg\sigma)$
- **internal ob-form B**      *davon hören 'hear about'*      [\(1d\)](#)  
A *da*-cor verb whether  $\sigma \Leftrightarrow$  A *da*-cor verb that  $(\sigma \vee \neg\sigma)$ ,  
if  $\sigma$  is a formula in the recursive build-up of a formula  $\varphi$  belonging  
to the range of validity of A *da*-cor verb that  $\varphi$ .  
Imagine  $\varphi$  as 'P comes if M will come' so that F hears that P comes if  
M comes. Then F hears about whether M is coming and also F hears  
about whether P is coming.

# 1 Introduction

## 1.3 wh-form

- (2) a. *F fragt, wer kommt.*  
F asks who is coming
- b. *F hört, wer kommt.*  
F knows who is coming
- c. *F bedenkt (es), wer kommt.*  
F considers (it) who is coming
- c'. *F denkt darüber nach, wer kommt*  
F thinks about                    who is coming
- d. *F hört davon, wer kommt*  
*F hears about* who is coming
- e. *F bedauert es, wer kommt.*  
F regrets it who is coming'

# 1 Introduction

## 1.3 wh-form

- ***exhaustive wh-form***

$wh(A, \text{verb}, \sigma) \Leftrightarrow \forall x [A \text{ verb ob } \sigma(x)]$

*fragen* 'ask'

(2a)

*wissen* 'know',

(2b)

# 1 Introduction

## 1.3 wh-form

- ***non exhaustive wh-form A*** [\(2c\)](#)  
wh(A, [cor],verb,  $\sigma$ )  $\Leftrightarrow$  A verb [cor] **whether**  $\mu$ ,  
with  $\mu$  being a contextually given proposition,  
e.g. ‘only M is coming’  
*bedenken wh ‘consider’, darüber nachdenken wh ‘think about*
- ***non exhaustive wh-form B*** [\(2d\)](#)  
*davon hören ‘hear about’*  
wh(A, [cor],verb,  $\sigma$ )  $\Leftrightarrow$  A verb [cor] **whether**  $\mu$ ,  
with  $\mu$  being a contextually given proposition in the recursive build-  
up of a formula  $\varphi$  belonging to the range of validity of *A verb da-cor*  
 $\varphi$ .  
Imagine  $\varphi$  as ‘P comes if M comes’ so that F hears about that P  
comes if M comes. Then F hears about whether M is coming  
and he also hears about whether P is coming.

# 1 Introduction

## 1.3 wh-form

- ***non exhaustive wh-form C***

wh(A, cor, verb,  $\sigma$ )  $\Leftrightarrow$  A verb [cor] **that**  $\mu$ ,

with  $\mu$  being a contextually given proposition, e.g. ‘only women are coming’

*es bedauern* ‘regret’

(2e)

*davon hören* ‘hear about’

(2d)

*es bedenken* ‘consider’

(2c)

*darüber nachdenken* ‘think about’

(2c’)



# 1 Introduction

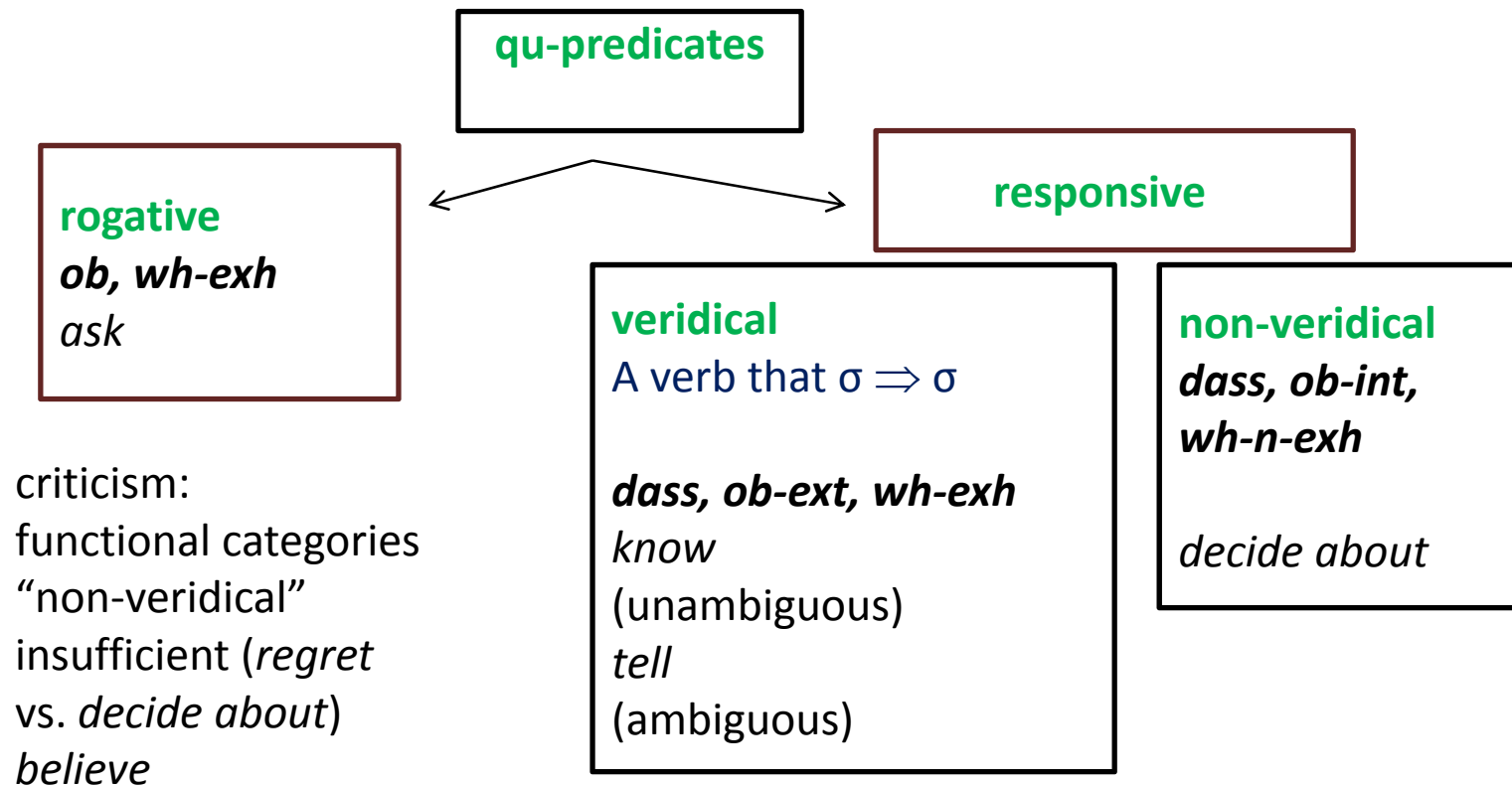
## 1.4 Predicate types

<p>i. <i>hören</i> 'hear'</p> <p><b><i>dass, ob-ext, wh-exh</i></b></p>	<p>ii. <i>fragen</i> (ask)</p> <p><b><i>ob, wh-exh</i></b></p>	<p>iii. <i>glauben</i> (believe)</p> <p><b><i>dass</i></b></p>	<p>iv. <i>zweifeln</i> 'doubt'</p> <p><b><i>dass, ob-ext</i></b></p>
<p>factive, semi-factive, qu-extension (G&amp;S 1982) fact (Ginzburg 1995)</p>	<p>qu-intension (G&amp;S 1982) question (Ginzburg 1995)</p>	<p>non-factive  proposition (Ginzburg 1995)</p>	<p>v. <i>bedauern</i> 'regret', <b><i>dass, wh-n-exh C</i></b></p>
			<p>vi. <i>davon hören</i> 'hear about' <b><i>dass, ob-int, wh-n-exh B, C</i></b></p>
			<p>vii. <i>bedenken</i> 'consider' <b><i>dass, ob-int, wh-n-exh A, C</i></b></p>

# 1 Introduction

## 1.4 Predicate types

- Lahiri (2002), Spector & Egré (2007), Egré (2008):



## 2 Consistency conditions and degrees

Consistency conditions define particular semantic properties:

- ***semi-implicative***  
x verb dass  $\sigma \Rightarrow \sigma$   
*wissen dass* 'know', *erreichen dass* 'manage', ...
- ***negation-invariant***  
x verb dass/ob  $\sigma \Leftrightarrow$  x verb dass/ob  $\neg\sigma$   
*wissen ob*, *fragen ob* 'ask', *zweifeln dass/ob* 'doubt' [consistent with negation-invariant], *kontrollieren ob* 'check', *bedenken ob* 'consider', *darüber nachdenken ob* 'think about', ...
- ***anti-semi-implicative***  
x verb dass  $\sigma \Rightarrow \neg\sigma$   
*(sich) irren (darin) dass* 'be wrong', *verhindern dass* 'prevent', ...

## 2 Consistency conditions and degrees

### ➤ *dass-form*

- is licensed if the predicate is not negation-invariant  
*glauben dass* 'believe', *wissen dass* 'know', *verhindern dass* 'prevent', *zweifeln dass* 'doubt' [is only consistent with negation-invariant].  
*\*fragen dass* 'ask', *\*untersuchen dass* 'investigate'

## 2 Consistency conditions and degrees

### 2.1 Objective predicates

- Semi-implicativity is a necessary but not a sufficient condition for the external *ob*-form – cf.

*wissen dass/ob* 'know' vs. *erreichen dass/\*ob* 'manage'

- Negation-invariance is a necessary, but not a sufficient condition for the exhaustive *wh*-form – cf.

*Frank weiß, wer kommt*

$wh(F, \text{know}, \text{come}) \Leftrightarrow \forall x [F \text{ knows } ob \sigma(x)]$

*Frank kontrolliert, wer kommt*

$wh(F, \text{check}, \text{come}) \not\Leftrightarrow \forall x [F \text{ checks } ob \sigma(x)]$

$wh(F, \text{check}, \text{come}) \Leftrightarrow F \text{ checks } ob \mu$  (= non-exhaust. *wh*-form)

## 2 Consistency conditions and degrees

### 2.1 Objective predicates

- ***Witness Existence Condition (WEC)***

$$\forall \sigma [\exists x (x \text{ verb dass/ob } \sigma) \vee \exists x (x \text{ verb dass/ob } \neg \sigma)]$$

Verbs being consistent with *WEC*:

*wissen dass/ob* 'know', *fragen ob* 'ask', *glauben dass* 'believe',  
*hoffen dass* 'hope', but not *bedauern* 'regret', *beweisen dass* 'prove'  
or *kontrollieren ob* 'check'.

## 2 Consistency conditions and degrees

### 2.1 Objective predicates

- **Objective predicates:** they are simultaneously consistent with WEC and either *semi-implicative* or *negation-invariant* or *anti-semi-implicative* (provided they do not display their possible correlates).
  - *wissen dass* ‘know’, *hören dass* ‘hear’, *sagen dass* ‘tell’  
(consistent with WEC & semi-implicative)
    - *wissen dass* is inherently semi-implicative
    - *hören dass* and *sagen dass* are non-inherently semi-implicative
  - *wissen ob*, *hören ob*, *zweifeln dass/ob* ‘doubt’  
(consistent with WEC & negation-invariant)
  - *(sich) irren dass* ‘be wrong’  
(consistent with WEC & anti-semi-implicative)

## 2 Consistency conditions and degrees

### 2.1 Objective predicates

#### ➤ **External ob-form**

A verb ob  $\sigma \Leftrightarrow (A \text{ verb dass } \sigma \vee A \text{ verb dass } \neg\sigma)$

- is licensed by all objective *dass*-predicates, except the anti-semi-implicative ones

*hören ob* 'hear', *zweifeln ob* 'doubt', \**sich irren ob* 'be wrong'

#### ➤ **Exhaustive wh-form**

wh(A, verb,  $\sigma$ )  $\Leftrightarrow \forall x [A \text{ verb ob } \sigma(x)]$

- is licensed by all objective predicates, provided they do not contradict *wissen dass* 'know'

*wissen wh* 'know', *fragen wh* 'ask', \**zweifeln wh* 'doubt', \**sich irren wh* 'be wrong'



## 2 Consistency conditions and degrees

### 2.2 Non-objective predicates

**Non-objective predicates** are characterized by *absolute*, *relative*, and *combined* consistency conditions

➤ ***Absolute consistency conditions***

correlate the possible truth values of the matrix verb and the possible truth values or consistency properties of the embedded proposition  $\sigma$

- ***semi-implicative***  
*erreichen dass* ‘manage’
- ***negation-invariant***  
*kontrollieren ob* ‘check’
- ***anti-semi-implicative***  
*verhindern dass* ‘prevent’

[11]

## 2 Consistency conditions and degrees

### 2.2 Non-objective predicates

- ***absolutely consistent***  
*x verb dass  $\sigma \Rightarrow \sigma$  is consistent*  
*bedenken dass 'consider', erraten 'guess', ...*
- ***absolutely contingent***  
*x verb dass  $\sigma \Rightarrow \sigma$  is contingent*  
*bedauern dass 'regret', schätzen dass 'appreciate', ...*
- ***absolutely intautological***  
*x verb dass  $\sigma \Rightarrow \sigma$  is not tautological*  
*bezweifeln dass 'doubt', vermuten dass 'imagine', ...*

## 2 Consistency conditions and degrees

### 2.2 Non-objective predicates

- ***absolutely tautological***

*x verb dass*  $\sigma \Rightarrow \sigma$  is a tautological formula propositionally built upon contingent constituents  $\tau, \eta, \dots$

*bedenken ob* which is the restriction of *bedenken dass* to the tautologies of the form  $\tau \vee \neg\tau$ , where  $\tau$  is absolutely contingent

- ***improperly semi-implicative***

semi-implicative & (*x verb dass*  $\sigma \Rightarrow \sigma$  is not tautological)

*es bedauern dass, es abstreiten dass* 'deny', ...

- ***[improperly] factive***

*x cor verb dass*  $\sigma \Rightarrow \sigma$  [& (*x verb dass*  $\sigma$  &  $\sigma$  is not tautological)]

*x cor not verb dass*  $\sigma \Rightarrow \sigma$  [& (*x verb dass*  $\sigma$  &  $\sigma$  is not tautological)]

*es bedauern*, but not *es beweisen* or *es erreichen* 'succeed'

## 2 Consistency conditions and degrees

### 2.2 Non-objective predicates

#### ➤ ***Relative consistency conditions***

correlate the possible truth values of the matrix verb with the consistency properties of the embedded  $\sigma$  as well as with the set  $[KN(x)]$  of statements the matrix-subject  $x$  knows.

Verbs fulfilling a relative consistency condition hold true only for embedded statements  $\sigma$  based on  $V(x)$ , i.e.  $\sigma$  is formulated by means of individual constants, predicate constants and parameters contained in the vocabulary  $V(x)$  of the subject's knowledge  $KN(x)$ .

#### • ***relatively cognitent***

*x verb dass  $\sigma \Rightarrow [\sigma$  follows from  $KN(x)]$  &  $\sigma$  is based on  $V(x)$*

*sich darauf konzentrieren dass 'concentrate upon', darüber*

*nachdenken dass 'think about'...*

## 2 Consistency conditions and degrees

### 2.2 Non-objective predicates

- ***relatively incognitent***

*x verb dass  $\sigma \Rightarrow [\sigma$  does not follow from  $KN(x)$  &  $\sigma$  based on  $V(x)$ ]*  
*darauf hoffen dass* ‘hope for’

- ***relatively consistent***

*x verb dass  $\sigma \Rightarrow [\sigma$  is consistent with  $KN(x)$  &  $\sigma$  based on  $V(x)$ ]*  
*sich freuen dass* ‘be glad’, *darüber diskutieren dass* ‘discuss’, ...

- ***relatively contingent***

*x verb dass  $\sigma \Rightarrow [\sigma$  is contingent with  $KN(x)$  &  $\sigma$  based on  $V(x)$ ]*  
*sich darauf freuen dass* ‘look forward’, *sich bemühen dass* ‘make an effort’, ...

## 2 Consistency conditions and degrees

### 2.2 Non-objective predicates

- ***improperly relatively cognitent/consistent***

*verb* is relatively cognitent/consistent &  $\forall \sigma \forall x [x \text{ verb dass } \sigma \text{ does not hold true for any propositional tautology } \sigma \text{ built upon constituents } \tau, \eta, \dots \text{ being contingent with } KN(x) \text{ \& } \sigma \text{ based on } V(x)]$   
*sich darüber freuen dass* 'be glad about', *darin denken dass* 'think of', *darüber klagen dass* 'complain', ...

## 2 Consistency conditions and degrees

### 2.2 Non-objective predicates

➤ ***Combined consistency conditions***

have a form  $\alpha \# \beta$ , where  $\alpha$  is an absolute and  $\beta$  is a relative consistency condition and neither  $\alpha \Rightarrow \beta$  nor  $\beta \Rightarrow \alpha$

• ***absolutely contingent # relatively consistent***

*diskutieren dass 'discuss', ...*

x verb dass  $\sigma \Rightarrow (\sigma \text{ is contingent } \vee [\sigma \text{ is consistent with KN}(x) \ \& \ \sigma \text{ is based on V}(x)])$

• ***absolutely intautological # improperly relatively consistent*** [\[22\]](#)

*hoffen dass 'hope', ...*

## 2 Consistency conditions and degrees

### 2.2 Non-objective predicates

- The union of the three classes of absolute, relative and combined consistency conditions are partially ordered by logical implication. The strongest consistency condition satisfied by a matrix predicate we call its *consistency degree*.



## 3 Internal ob-form and non-exhaustive wh-forms

### 3.1 Internal *ob*-forms

➤ **Internal ob-form A** (*ob-int* for non-objective predicates)

$A \text{ verb } ob \sigma \Leftrightarrow A \text{ verb } dass (\sigma \vee \neg\sigma)$

- if the predicate does not exclude propositional tautologies:

❖ **absolutely consistent** [18]

*bedenken ob* ‘consider’, \**bedauern ob* ‘regret’ [absolutely contingent 18], \**bestreiten ob* [absolutely intautological 18] or

❖ **relatively cognitent** [20] or **relatively consistent** [21]

*sich dafür interessieren ob*, (*darüber*) *spekulieren ob*, \**sich darüber/darauf freuen ob* [improperly relatively cognitent 22/ relatively contingent 21] \**darauf bestehen ob* ‘insist’ [relatively contingent]

## 3 Internal ob-form and non-exhaustive wh-forms

### 3.1 Internal *ob*-forms

- if  $\beta$  in the combined consistency degree  $\alpha \# \beta$  does not exclude tautologies

*(darüber) diskutieren ob*

[absolute contingent # relatively consistent],

*(darauf) hoffen \*ob*

[absolutely intautological # improperly relatively consistent [22](#)]

## 3 Internal ob-form and non-exhaustive wh-forms

### 3.1 Internal *ob*-forms

➤ **Internal ob-form B** (for originally objective predicates)

A *da*-cor verb whether  $\sigma \Leftrightarrow$  A *da*-cor verb that  $(\sigma \vee \neg\sigma)$ ,

if  $\sigma$  is a formula in the recursive build-up of a formula  $\varphi$  belonging to the range of validity of *x verb*  $\varphi$ .

- if the predicate not *inherently semi-implicative* and exhibits a legitimate *da*-correlate:

*davon hören ob* 'hear about', *daran zweifeln ob* 'doubt', *danach fragen ob* 'ask for', and *darin irren ob* 'be wrong about',  
\**davon wissen ob* 'know about'.

Apropos: if objective predicates exhibit a correlate, they are not objective anymore.

### 3 Internal *ob*-form and non-exhaustive *wh*-forms

#### 3.2 Non-exhaustive *wh*-forms

➤ ***non exhaustive wh-form A*** (*for non-objective predicates*)

$wh(A, [cor], verb, \sigma) \Leftrightarrow A \text{ verb } [cor] \text{ whether } \mu,$

with  $\mu$  being a contextually given proposition,

e.g. ‘only M is coming’

- if the predicate allows the internal *ob*-form A

*(es) bedenken wh ‘consider’, darüber nachdenken wh ‘think about’, (es/darüber) diskutieren wh ‘discuss’, (es) untersuchen ‘investigate’*

### 3 Internal *ob*-form and non-exhaustive *wh*-forms

#### 3.2 Non-exhaustive *wh*-forms

➤ ***non exhaustive wh-form B*** (for originally objective verbs)

$wh(A, [cor], verb, \sigma) \Leftrightarrow A \text{ verb } [cor] \text{ whether } \mu,$

with  $\mu$  being a contextually given proposition in the recursive build-up of a formula  $\varphi$  belonging to the range of validity of *A verb da-cor*  $\varphi$ .

- if the predicate allows the internal *ob*-form B  
*davon hören wh* ‘hear about’

### 3 Internal *ob*-form and non-exhaustive *wh*-forms

#### 3.2 Non-exhaustive *wh*-forms

➤ ***non exhaustive wh-form C***

$wh(A, cor, verb, \sigma) \Leftrightarrow A \text{ verb [cor] that } \mu$ ,  
with  $\mu$  being a contextually given proposition, e.g. ‘only women are coming’

- if the verb is non-objective and factive together with the legitimate *es*- or *da*-correlate
  - ❖ (improperly) factive predicates [19]  
*es bedenken wh ‘consider’, es bedauern wh ‘regret’,*  
*\*es beweisen wh ‘prove’ [not factive]*
  - ❖ (improperly) relatively cognitent predicates  
*sich darüber freuen wh ‘be glad’,*  
*es/darauf hoffen wh ‘hope’, [absolutely intautological/ impr. relatively consistent]*
- if the verb is objective and exhibits a legitimate correlate  
*davon hören wh ‘hear about’, es hören wh*

# Summary

i. <i>hören</i> 'hear'	ii. <i>fragen</i> 'ask'	iv. <i>zweifeln</i> 'doubt'
objective & not anti-semi-implicative		

*ob-(ext)*

i. <i>hören</i> 'hear'	ii. <i>fragen</i> 'ask'
objective & consistent <i>with wissen dass</i>	

*wh-exh*

<i>untersuchen</i> 'investigate'	vii. <i>bedenken</i> 'consider'	<i>darüber nachdenken</i> 'think about'
do not exclude tautologies		

*ob-int*      *wh-n-exh A*

<i>es hören</i> 'hear'	<i>es bedenken</i> 'consider'	v. <i>es bedauern</i> 'regret'	<i>darüber nachdenken</i> 'think about'
factive			<i>sich darüber freuen</i> 'glad about'

*wh-n-exh C*

vi. *davon hören* 'hear'      *ob-int B*

## REFERENCES

- Égré, P. (2008), "Question-Embedding and Factivity", *Grazer Philosophische Studien* 77, 85-125.
- Égré P. & Spector B. (2007), "Embedded Questions Revisited: An Answer, not necessarily The Answer". Ms, Harvard & IJN.
- Ginzburg, J. & Sag, I. A. (2000), *Interrogative Investigations, The Form, Meaning, and Use of English Interrogatives*. CSLI Publications: Stanford.
- Groenendijk J. & Stokhof M. (1982), "Semantic Analysis of Wh-Complements", *Linguistics and Philosophy* 5, 117-233.
- Lahiri, U. (2002), *Questions and Answers in Embedded Contexts*. Oxford Studies in Theoretical Linguistics, Oxford.
- Meinunger, A. (2006), 'The discourse status of subordinate sentences and some implications for syntax and pragmatics', In V. Molnár & S. Winkler (Hrsgs): 'Architecture of Focus. Mouton de Gruyter: 459-487.
- Schwabe K. & Fittler R. (2009), "Semantic Characterizations of German Question-Embedding Predicates", in: P. Bosch, D. Gabelaia, and J. Lang (eds.): *TbiLLC 2007*, LNAI 5422, 229-241. Springer-Verlag Berlin Heidelberg.
- Stiebels, B. (2007), Towards a typology of complement control. In: Barbara Stiebels (ed.), *ZAS Papers in Linguistics* 47, 1-80