

***Purely logical conditions ruling German proposition
embeddings***

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❖ Aim of the talk

□ To present purely logical conditions – consistency conditions - that determine the different syntactic behavior of German proposition embedding verbs. We will focus on interrogative embedding predicates, but also look at constructions with correlates and non-canonical argument realization.

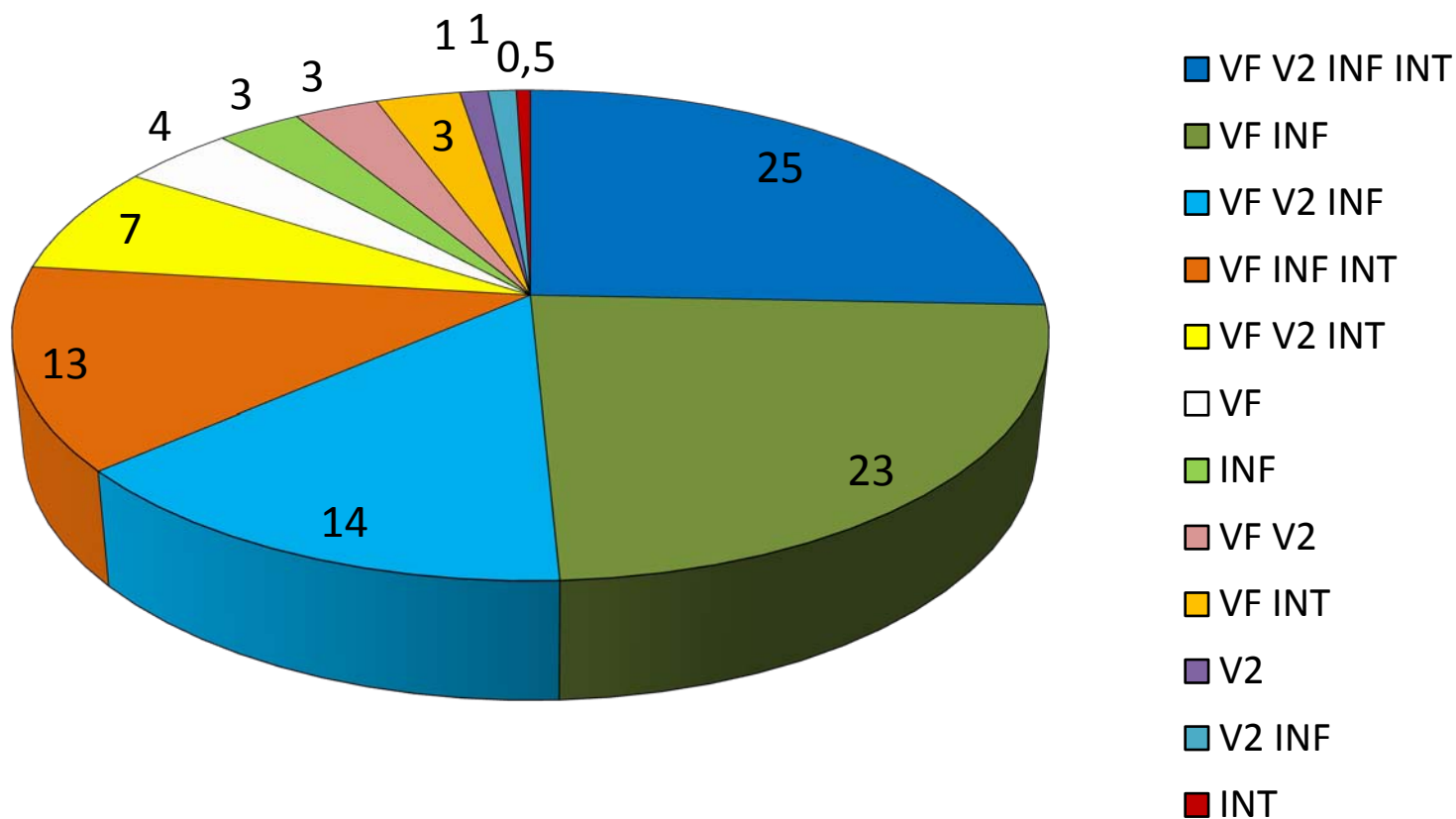
- I. Question embedding
 - i. Empirical data
 - ii. Semantic approaches
 - iii. Basics
 - iv. Consistency conditions of proposition embedding predicates
- II. Correlate constructions (Modification of consistency conditions by correlates)
 - i. Notion of correlates
 - ii. Correlates and predicate meaning

I. Question embedding

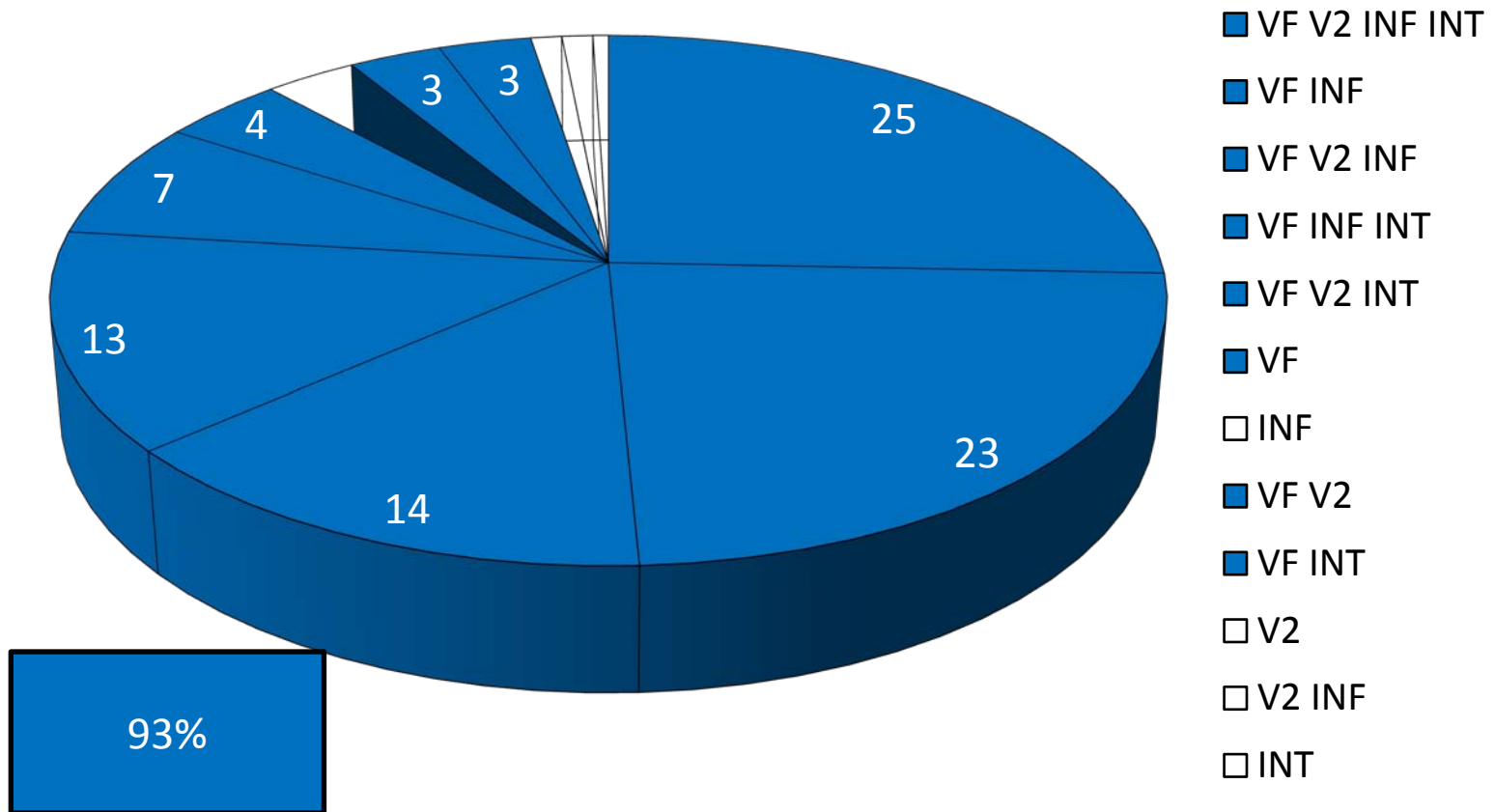
1. Empirical data

- The embedded clause type or the form of the construction is determined by particular semantic properties of the matrix predicate, the semantic Consistency conditions.
 - **dass-form**
Frank glaubt, dass Maria kommt.
'F believes that Maria is coming'
 - **ob-form**
Frank fragt, ob Maria kommt.
'Frank asks whether Maria is coming'
 - **wh-form**
Frank fragt, wer kommt.
'Frank asks who is coming'
 - **wenn-form**
Frank bedauert es, wenn Maria krank ist
'Frank regrets it if Maria is ill'

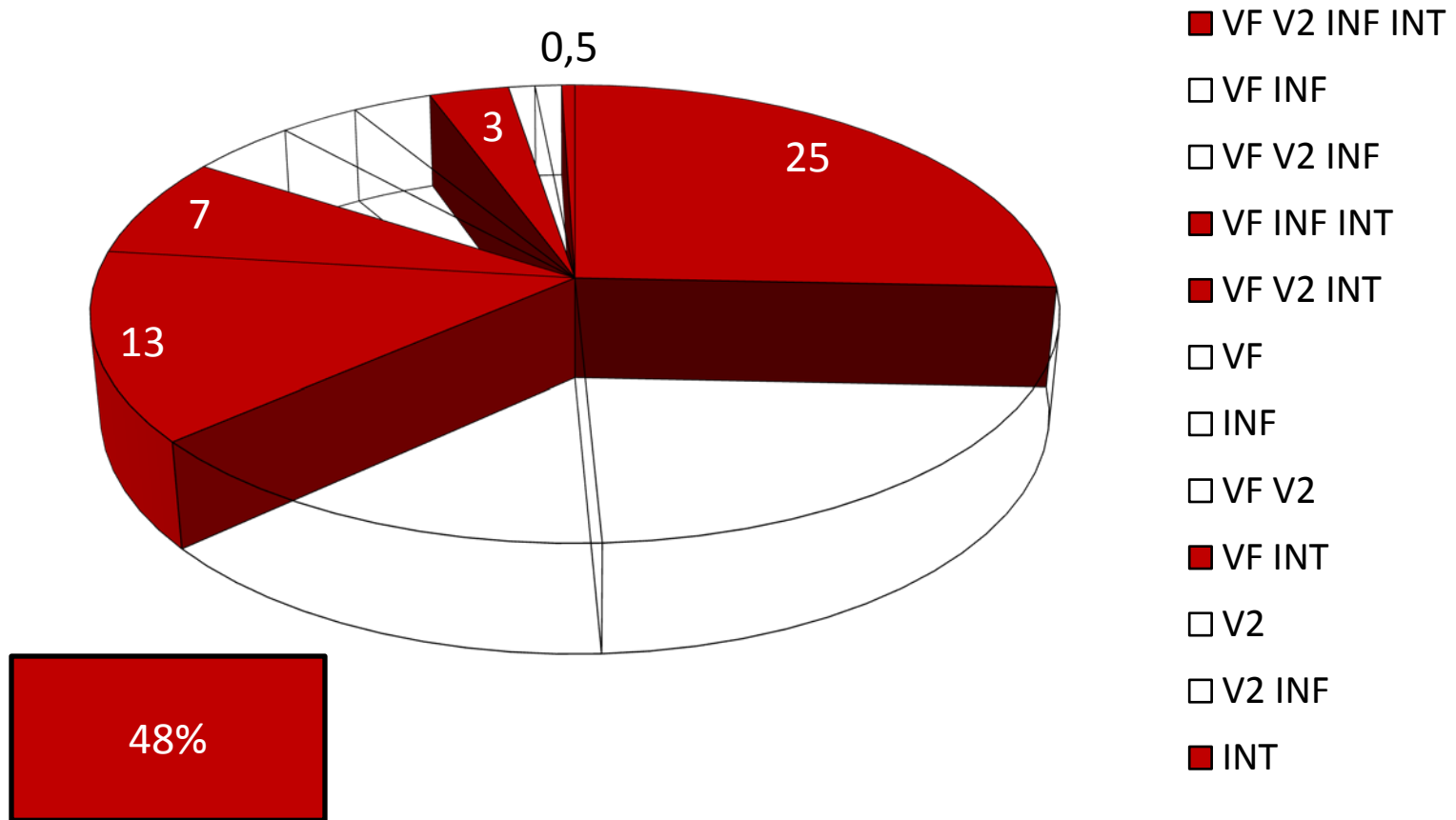
- Predicate classes of about 1720 German proposition embedding predicates in terms of admissible clause types: Percentage of predicates (ZAS-data base, November 2010)



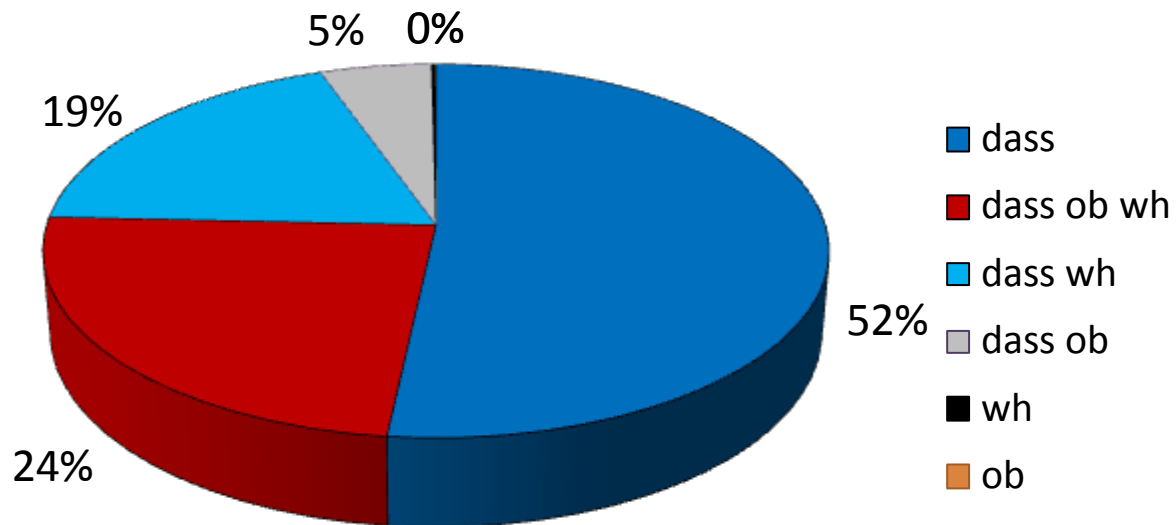
- Predicate classes in terms of admissible V-final declaratives: Percentage of predicates (November 2010).



- Predicate classes in terms of admissible interrogatives: Percentage of predicates (November 2010)



- Predicate classes in terms of admissible dass-, ob-, and wh-forms: (March 2011)



❖ Paraphrases of *ob*-forms and *wh*-forms

➤ **External *ob*-form** *wissen ob* 'know', *hören ob* 'hear', *fragen ob* 'ask whether'

- A verb *ob* $\sigma \Leftrightarrow$ (A verb *dass* $\sigma \vee$ A verb *dass* $\neg\sigma$), if there is a *dass*-form

1) a. F hört, ob M kommt.

F hears whether M comes

(a'. F fragt, ob M kommt.)

F asks whether M comes

➤ **Internal *ob*-form** *bedenken* 'consider', *ignorieren* 'ignore'

A verb *ob* $\sigma \Leftrightarrow$ A verb *dass* ($\sigma \vee \neg\sigma$)

b. F bedenkt, ob M kommt.

F considers whether M comes

➤ **bound external *ob*-form** *es hören ob* 'it hear'

A verb *es ob* $\sigma \Leftrightarrow$ (x verb *es ob* $\sigma \vee$ x verb *es ob* $\neg\sigma$) with the range of validity restricted to contingent σ 's

c. F hört es, ob M kommt.

F hears it whether M comes

➤ **Neutral *ob*-form** *davon hören* ‘hear about’

A verb ProPP *ob* $\sigma \Leftrightarrow$ A verb ProPP *dass* ϕ , where σ is some subformula of ϕ . For instance, if F hears ProPP that ϕ (M only comes if L will come) then F hears ProPP whether σ (M is coming).

- d. F hört **davon**, ob M kommt
F hears ProPP whether M comes

➤ **Exhaustive *wh*-form**

$wh(A, \text{verb}, \sigma) \Leftrightarrow \forall x [A \text{ verb } \textit{dass} \sigma(x) \vee A \text{ verb } \textit{dass} \neg\sigma(x)]$

- 2) a. F weiß, wer kommt.
F knows who comes

➤ Non-exhaustive wh-form

- $wh(A, es/ProPP, verb, \sigma) \Leftrightarrow A \text{ verb } es/ProPP \text{ **dass/ob** } \mu$, where μ is a contextually given answer to the question $wh_y \sigma(y)$.
- b. F bedenkt (es), wer kommt.
F considers (it) who is comes
- b'. F denkt darüber nach, wer kommt
F thinks ProPP who comes
- c. F hört davon, wer kommt
F hears about who comes
- $wh(A, es/ProPP, verb, \sigma) \Leftrightarrow A \text{ verb } es/ProPP \text{ **dass** } \mu$, where μ is a contextually given answer to the question $wh_y \sigma(y)$.
- d. F bedauert es, wer kommt.
F regrets it who comes

For example, *F weiß es/hört davon, wer anwesend ist* 'F knows it/ProPP who is present' can be paraphrased as 'F knows it/hears about *that* only women are present' or 'F knows it/hears about *whether* only women are present'. Here μ abbreviates 'For all y : if y is present, then y is a woman'.

2. Semantic approaches

- Predicate classes in terms of admissible question forms

<p>i. hören ‘hear’ <i>dass</i>-form, <i>external ob</i>-form, <i>exhaustive wh</i>-form</p>	<p>ii. fragen (ask) ext. <i>ob</i>-form, exh. <i>wh</i>-form</p>	<p>iii. glauben (believe) <i>dass</i>-form only</p>	<p>iv. zweifeln ‘doubt’ <i>dass</i>-form, <i>external ob</i>-form</p>
<p>factive, semi-factive, qu-extension (G&S 1982) fact (Ginzburg 1995),</p>	<p>qu- intension, (G&S 1982) question, (Ginzburg 1995)</p>	<p>non-factive, proposition (Ginzburg 1995)</p>	<p>v. bedauern ‘regret’, <i>dass</i>-form, non-exh. <i>wh</i>-form</p>
			<p>vi. davon hören ‘hear’, <i>dass</i>-form, neutral <i>ob</i>-form, non-exh. <i>wh</i>-form</p>
			<p>vii. bedenken ‘consider’ <i>dass</i>-form, internal <i>ob</i>-form, non-exh. <i>wh</i>-form</p>

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

"qu-predicates"		
"rogative"	"responsive"	
	"veridical" (A verb that $\sigma \Rightarrow \sigma$) <i>dass</i> -form, external <i>ob</i> -form, exhaustive <i>wh</i> -form <i>"know</i> (unambiguous) <i>tell</i> (ambiguous)" [=i]	"non-veridical" <i>dass</i> -form, internal <i>ob</i> -form, non-exhaustive <i>wh</i> -form <i>"decide about"</i> [=vii]
external <i>ob</i> -form, exhaustive <i>wh</i> -form <i>ask</i> [= ii]		

criticism:

functional and non-functional categories

"veridical" insufficient (*know* vs. *prove*)

"non-veridical" insufficient (*decide about* vs. *believe* vs. *regret*)

- Schwabe & Fittler (2009, 2010)

They explain the syntactic behavior of proposition-embedding predicates with the help of logical properties of the embedded clauses and partially by the relation of the embedded proposition to the matrix clause. The logical properties are called consistency properties.

- Objective consistency conditions
- Non-objective consistency conditions

3. Basics

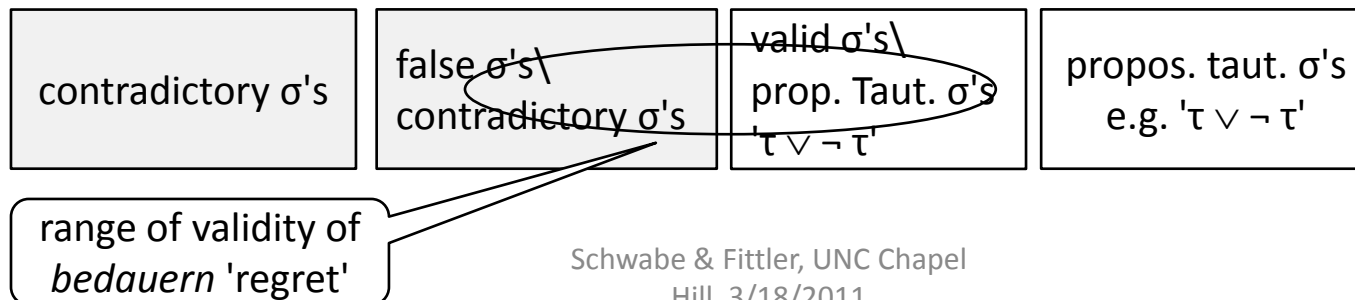
- To fix a formal framework, we deal with semantic models – called **constellations** – each consisting of a first order structure \aleph modeling the embedded statements of a first order language L and an appropriate truth valuation of the set of matrix sentences ' α verb (es/ProPP) dass/ob σ '.

– Notice that *pred* denotes both verbs not showing any of their possible correlates as well as verbs showing a legitimate correlate.

- An important tool for our purposes is the concept **range of validity** of a matrix predicate *pred* with respect to an individual α in \aleph . The range of validity

'val (*pred*; α , \aleph): = { σ | α *pred* σ is valid in \aleph }' (where the σ 's are the embeddable formulas with parameters in \aleph having no free variables)

is the set of embedded statements rendering the matrix clause valid in a constellation \aleph .



Schwabe & Fittler, UNC Chapel Hill, 3/18/2011

4. Consistency conditions

- Consistency conditions define particular semantic properties relevant for embedded clause types, the most elementary ones are:
 - **semi-implicative SI**
x verb dass $\sigma \Rightarrow \sigma$
wissen dass 'know', erreichen dass 'manage', ...
 - **negation-invariant NI**
x verb dass/ob $\sigma \Leftrightarrow$ x verb dass/ob $\neg\sigma$
wissen ob, fragen ob 'ask', zweifeln dass/ob 'doubt' [zweifeln dass is consistent with negation-invariant], kontrollieren ob 'check', bedenken ob 'consider', darüber nachdenken ob 'think about', ...
 - **anti-semi-implicative AI**
x verb dass $\sigma \Rightarrow \neg\sigma$
(sich) irren (darin) dass 'be wrong', verhindern dass 'prevent', ...
 - **KN-consistency**
x pred dass/ob σ is consistent with x knows that σ
beweisen dass 'prove', fragen ob 'inquire', in contrast to sich irren dass 'be mistaken', zweifeln dass/ob 'doubt'

☞ **dass-form**

is legitimate 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'

? **External *ob*-form, non-exhaustive *wh*-form** (cf. Slide [8](#), [10](#))

- Semi-implicativity of the *dass*-form is neither a necessary nor a sufficient condition for the external *ob*-form – cf. *wissen dass/ob* 'know' (1a) vs. *erreichen dass/*ob* 'manage', *sagen dass/ob* 'say' vs. *zweifeln dass/ob*
- Negation-invariance is a necessary, but not a sufficient condition for the exhaustive *wh*-form :

(2) a. *Frank weiß, wer kommt* 'Frank knows who is coming'

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

a'. *Frank kontrolliert, wer kommt* 'F checks who is coming'

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

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

○ **SI/AI/NI-objective**

❖ Objective predicates

Definition: a predicate *verb dass/ob* is called **objective** if **either**

- i. *verb dass* is consistent with
verb is **SI** and $\cup\{\text{val}(\text{verb}, \alpha, \aleph) \mid \alpha \in \aleph\} = \{\sigma \mid \sigma \text{ is valid in } \aleph\}$ **or**
- ii. *verb dass* is consistent with
verb is **AI** and $\cup\{\text{val}(\text{verb}, \alpha, \aleph) \mid \alpha \in \aleph\} = \{\sigma \mid \sigma \text{ is invalid in } \aleph\}$ **or**
- iii. *verb dass/ob* is consistent with
verb is **NI** and $\cup\{\text{val}(\text{verb}, \alpha, \aleph) \mid \alpha \in \aleph\} = \text{the set of all } \sigma\text{'s.}$

— The definition implies that for every σ or $\neg\sigma$, there is an individual x such that x *verbs dass/ob* σ or there is an individual x such that x *verbs dass/ob* $\neg\sigma$, in at least one constellation \aleph .

- i. **SI**-objective predicates: *wissen dass* 'know', *hören dass* 'hear', but not *beweisen dass* 'prove',
- ii. **AI**-objective predicates: *sich irren* 'be mistaken, but not *widerlegen dass* 'refute'
- iii. **NI**-objective predicates: *fragen ob* 'inquire', *untersuchen ob* 'investigate' but not *kontrollieren ob* 'check'.

☞ **External ob-form for objective predicates**

- A verb ob $\sigma \Leftrightarrow$ (A verb dass $\sigma \vee$ A verb dass $\neg\sigma$)
- 'A verb ob σ ' is legitimate if the matrix predicate is SI- or NI-objective,
hören ob 'hear', *zweifeln ob* 'doubt', but not *sich irren ob* 'be wrong'
- 'A verb ob σ ' is legitimate if the matrix predicate is NI-objective and does not have a *dass*-form.

fragen ob 'hear', but not *kontrollieren ob* 'heck'

- 1) a. F hört, ob M kommt.
F hears whether M comes
- a'. F fragt, ob M kommt.
F asks whether M comes

☞ **Exhaustive wh-form for objective predicates**

- $wh(A, \text{verb}, \sigma) \Leftrightarrow \forall x [A \text{ verb ob } \sigma(x)]$
- 'wh(A, verb, σ)' is legitimate if the predicate is SI- or NI-objective and KN-consistent – cf. slide [15](#).

wissen wh 'know', fragen wh 'ask', but not zweifeln wh 'doubt' and sich irren wh 'be wrong'

- 2) a. F hört, wer kommt.
'F asks who is coming'
- a'. F fragt, wer kommt.
'F knows who is coming'

objective predicates

external ob-form ✓

exhaustive wh-form ✓

non-objective predicates

other ob-forms ?

non-exhaustive wh-form ?

❖ Non-objective predicates

objective predicates: <i>wissen</i> 'know', <i>hören</i> 'hear', <i>fragen</i> 'ask', ...	non-objective predicates	
	objectively based: <i>es/davon wissen</i> 'it/ProPP know', <i>es/davon hören</i> , 'hear' <i>danach fragen</i> 'ask', ...	non-objectively based: <i>(es) bedauern</i> 'regret', <i>darüber nachdenken</i> 'think', <i>es/darauf hoffen</i> 'hope', ...

- Any well-formed matrix-predicate *verb cor dass* will be called **SI/NI/AI-objectively based** if *verb dass* without the correlate is SI/NI/AI-objective, e.g. *es wissen dass/ob* 'know it that/whether' or *davon wissen dass* 'know about that'.
 - Notice that objectively based predicates are non-objective.
 - Any well-formed matrix-predicate verb (cor) will be called **non-objectively based** if if *verb dass* is not SI/NI/AI- objective.
- **Non-objectively based non-objective predicates**

To present the consistency conditions of non-objectively based non-objective predicates, we take the first order language $L[\mathfrak{N}]$ of the embedded propositions (the free variables being replaced by parameters from \mathfrak{N}) for any constellation \mathfrak{N} as a starting point (cf. slide [14](#)) and develop the concept of **consistency levels** of embedded propositions and the concept of **consistency degrees** of matrix verbs

➤ **Absolute consistency levels**

absolute consistency levels in $L[\aleph]$			
c_{\aleph}	f_{\aleph}	v_{\aleph}	t_{\aleph}

- For each \aleph , the absolute consistency levels consist of the set of embeddable propositions without free variables from $L[\aleph]$ having a logical property as indicated.
 - c_{\aleph} : consists of all contra-dictions in $L[\aleph]$.
 - f_{\aleph} : consists of all σ 's false in \aleph except the contradictions in $L[\aleph]$.
 - t_{\aleph} : consists of all absolute propositional tautologies in $L[\aleph]$, i.e. t_{\aleph} arises from purely propositional formulas which are tautologies by replacing the propositional variables by contingent first order formulas from $L[\aleph]$.
 - v_{\aleph} : consists of all σ 's valid in \aleph except the absolute propositional tautologies in $L[\aleph]$.

➤ **Relative consistency levels**

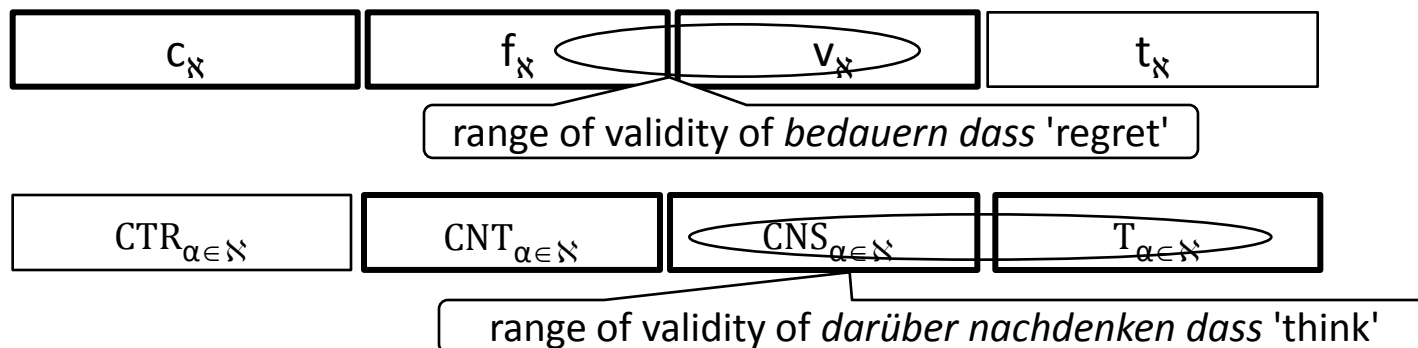
Relative consistency levels in $L[\aleph]$			
$CTR_{\alpha \in \aleph}$	$CNT_{\alpha \in \aleph}$	$CNS_{\alpha \in \aleph}$	$T_{\alpha \in \aleph}$

- A relative consistency level depends upon both \aleph and α , $\alpha \in \aleph$. Each relative consistency level consists of a set of embeddable σ 's from the vocabulary $V(\alpha)$ of what α knows and it depends explicitly on the set $[KN(\alpha)]$ that α knows.
 - $T_{\alpha \in \aleph}$: consists of the *relative propositional tautologies* that arise from purely propositional tautological formulas by replacing the propositional variables by formulas which are contingent with the knowledge of α .
 - $CNS_{\alpha \in \aleph}$: comprehends those embeddable σ 's from $V(\alpha)$ which follow from $KN(\alpha)$ and do not belong to $T_{\alpha \in \aleph}$.
 - $CNT_{\alpha \in \aleph}$: consists of all embeddable σ 's from $V(\alpha)$ in $L[\aleph]$ which are contingent with $KN(\alpha)$.
 - $CTR_{\alpha \in \aleph}$: consists of all embeddable σ 's from $V(\alpha)$ in $L[\aleph]$ contradicting $KN(\alpha)$.

- Predicates relating to absolute consistency levels realize their propositional arguments by internal and external complements, i.e. by Nominative or Accusative – cf. (3a, b).
- Predicates relating to relative consistency levels realize their propositional arguments by oblique arguments, i.e. by PPs or ProPPs, respectively – cf. (3c).

- 3) a. Max hat **es** bedauert, [dass Lea krank ist].
 Max has it regretted that Lea ill is
- b. Sicher ist **es** schade, [dass Lea krank ist].
 certainly is it a pity that Lea ill is
- c. Max hat sich **darüber** gefreut, [dass Lea glücklich ist].
 Max has REFL ProPP enjoyed that Lea happy is

➤ consistency degrees

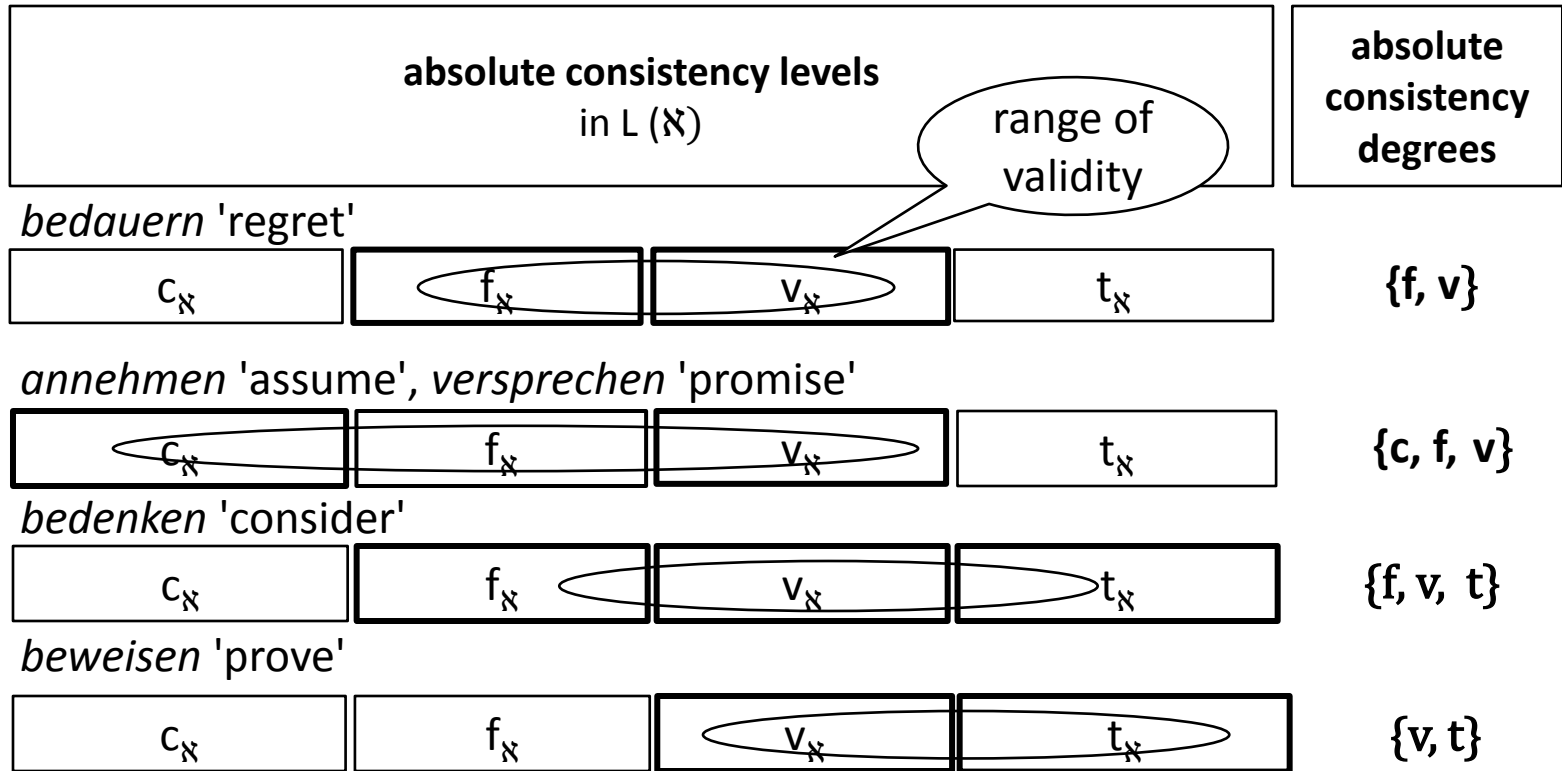


- A family $F_{\alpha, \mathbb{N}}$ of consistency levels is called a *covering* of a matrix-predicate *pred* if for all \mathbb{N} and all $\alpha \in \mathbb{N}$ $\text{val}(\text{pred}; \alpha, \mathbb{N}) \subseteq \bigcup_{\alpha, \mathbb{N}} F_{\alpha, \mathbb{N}}$.

E.g. *bedauern dass* 'regret' is covered by $\{c_N, f_N, v_N\}$ and *darüber nachdenken* is covered by $\{CNT_{\alpha \in \mathbb{N}}, CNS_{\alpha \in \mathbb{N}}, T_{\alpha \in \mathbb{N}}\}$
- A covering of a non-objective predicate will be called the **consistency degree** $CD(\text{pred})$ of the predicate *pred* if it is the only covering of *pred* which by dropping any of its consistency levels loses its covering property with respect to *pred*.

bedauern 'regret': $CD(\text{bedauern dass}) = \{f_N, v_N\}$

darüber nachdenken 'think': $CD(\text{darüber nachdenken dass}) = \{CNS_{\alpha \in \mathbb{N}}, T_{\alpha \in \mathbb{N}}\}$



$c_{\mathfrak{N}}$: consists of all contra-dictions in $L[\mathfrak{N}]$.

$f_{\mathfrak{N}}$: consists of all σ 's false in $L[\mathfrak{N}]$ except the contradictions in $L[\mathfrak{N}]$.

$v_{\mathfrak{N}}$: consists of all σ 's valid in $L[\mathfrak{N}]$ except propositional tautologies, e.g. ' $\tau \vee \neg \tau$ '.

$t_{\mathfrak{N}}$: consists of all absolute propositional tautologies in $L[\mathfrak{N}]$

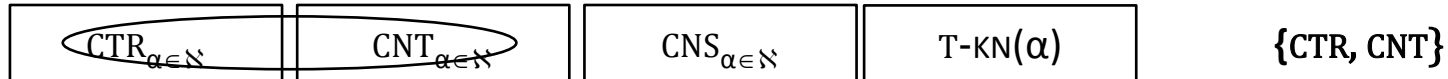
If σ is neither contradictory nor tautological, it is **contingent**.

relative consistency levels in the vocabulary $V(\alpha, \aleph)$ of $\text{KN}(\alpha)$	relative consistency degrees
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a. *sich freuen* 'enjoy'



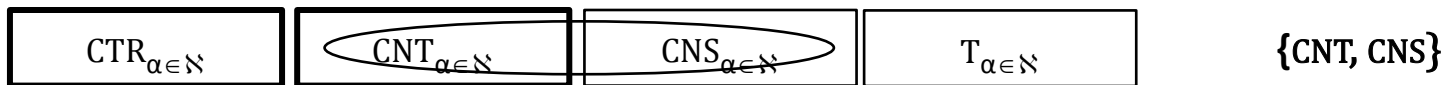
b. *bitten* 'ask'



c. *darüber nachdenken* 'think about'



d. *sich dazu eignen*



$\text{KN}(\alpha)$: set of statements α knows

$\text{CTR}_{\alpha \in \aleph}$: set of statements contradicting $\text{KN}(\alpha)$

$\text{CNT}_{\alpha \in \aleph}$: set of statements contingent with $\text{KN}(\alpha)$ in \aleph , i.e. set of statements not contradicting $\text{KN}(\alpha)$ and not being $\text{T}_{\alpha \in \aleph}$

$\text{CNS}_{\alpha \in \aleph}$: set of statements following from $\text{KN}(\alpha)$ and not being $\text{T}_{\alpha \in \aleph}$

$\text{T}_{\alpha \in \aleph}$: set of propositionally tautological statements

- A non-objective matrix-verb *verb dass/ob* has an **absolute consistency degree** if its CD contains only absolute consistency levels – cf. *bedauern dass* CD = {f, v}
- It has a **relative consistency degree** if its consistency degree contains only relative consistency levels – cf. *sich freuen dass* 'enjoy' cd = {CTR, CNS}.
- It has a **combined consistency degree** if it contains absolute and relative consistency degrees – cf. *glauben dass* 'believe' with CD = {c, f, CNT, CNS} and *hoffen dass* 'hope' with CD = {CTR, f, v}.
- Non-objective verbs like *flüstern dass* 'whisper' and *schreien dass* 'shout' do not have any consistency degree, i.e. they are not restricted wrt. the statement they embed.
- There are three-place predicates α *pred* β *dass/ob* σ like *ärgern* 'annoy' the consistency degree of which relates to the object variable β , e.g. *Frank belastet Maria damit, dass er schnarcht* 'Frank stresses Maria ProPP that he is snoring'. Here, the range of validity $\text{val}(\alpha, \textit{damit belasten dass}, \beta, \aleph)$ is a subset of the consistency level $\text{CNS}_{\beta \in \aleph}$ for every triple $\langle \alpha, \beta, \aleph \rangle$, where $\alpha, \beta \in \aleph$. In such a case we supply the consistency level involved with an upper cross #, e.g. $\text{CNS}^{\#}_{\beta \in \aleph}$. The correspondent consistency degree is $\{\text{CNS}^{\#}_{\beta \in \aleph}\}$.

☞ **Internal ob-form for non-objectively based predicates**

- A verb ob $\sigma \Leftrightarrow$ A verb dass ($\sigma \vee \neg \sigma$)
- 'A verb ob σ ' is legitimate if the predicate displays a consistency degree containing 'f' and 't' or 't' alone or 'T'.

bedenken {f, v, t} and *ignorieren* 'ignore' {f, v, t}, but not *erreichen* 'manage' {v}, *beweisen* 'prove' {v, t} and *vorziehen* 'prefer' {f, v}.

diskutieren 'discuss' {f, v, T}, *nachdenken* 'consider' {CNT, T}, but not *drohen* 'threat' {CTR, CNT, CNS} and *antworten dass (damit)* 'answer' {CTR, CNT, CNS}

1) c. F bedenkt, ob M kommt.

'F considers whether F is coming'

c'. F denkt (darüber) nach, ob M kommt.

'F considers ProPP whether M is coming

- Notice that a ProPP which is obligatory in a *dass*-form of *darüber nachdenken* 'think about' may be omitted in the corresponding *ob*-form .

? **Non-exhaustive wh-form** (cf. slide [10](#))

II Correlates

1. Notion of correlate and empirical data

❖ Notion of correlate

A correlate relates to an abstract object, a statement, which is expressed by an associated clause. The correlate is related to its associated clause internally. We distinguish between syntactic and semantic correlates

➤ **A syntactic correlate** relates to an associated proposition that is a canonically realized clausal argument:

- 3) a. Max hat **es** bedauert, [dass Lea krank ist].
Max has it regretted that Lea ill is
- b. Sicher ist **es** schade, [dass Lea krank ist].
certainly is it a pity that Lea ill is
- c. Max hat sich **darüber** gefreut, [dass Lea glücklich ist].
Max has REFL ProPP enjoyed that Lea happy is

➤ **A semantic correlate** relates to a propositional argument which is realized non-canonically.

4) a. Max freut sich **darüber**, [wenn Lea glücklich ist].

Max enjoys REFL ProPP if Lea happy is

b. Max bedauert **es**, [wenn Lea traurig ist].

Max regrets it if Lea sad is

c. Gieser rühmte sich sogar **damit**, er habe die Beschaffung eines
Gieser prides REF even ProPP he has.KONJL the provision of a
bestimmten Konkurrenzgerätes gestoppt.

particular rival instrument stopped DWDS Zeit 1991

➤ **es-correlate**

- It realizes a complement of a verbal head.
 - internal argument (DO) ⇒ ACC
 - external argument (S) ⇒ NOM
 - *es*-correlates are mostly optional
 - **obligatory** correlates

angehen 'start', *einrichten* 'see to it', *entbehren* 'do without', *hinbringen* 'manage', *hergeben* 'allow', *richten* 'manage', *ändern* 'change', *satt haben* 'get sick of'

➤ **ProPP**

- It is a PP that is either a
 - complement of a verbal head or
 - a supplement
- It has a prepositional and a pronominal part. The pronominal part is specified by the associated clause. The pronominal part and its associated clause have an indirect argument status. They are oblique.

$[_V' [_{PP} \text{ProPP CP}] V^0] \Rightarrow \text{OBL}[\%]$

- ProPPs are either optional or obligatory

davor zittern 'be terrified', (*darüber*) *triumphieren* 'triumph'

▪ **Es-correlates**

• Subject-es

- 5) a. Um so mehr erstaunt (es), wieviel Anteilnahme ... sie ... erfuhr.
the more astonishes it how much interest she got DWDS Zeit 1992
- b. Es sickerte bald durch, daß er die ganze Ansprache in seiner Schiffskabine
it filtered soon through that he the whole speech in his cabin
selbst verfaßt hatte.
himself written had DWDS Zeit 1959

• Object-es

- 6) a. Er gibt keine Ruhe, bis wir **(es) merken**, wer und was er für uns ist und ...
he gives no rest until we it realize who and what he for us is and ...
GBS Barth 1979
- b. Ich **finde (es) wunderbar**, dass ... nicht alles vorgeschrieben ist.
I think it wonderful that not all prescribed is
DWDS BZ 1999
- c. Als Christ **akzeptiere ich (es), wenn** jemand bereut.
as christian accept I it if anyone regrets
DWDS BZ 1976

■ ProPP

• optional ProPP

- 7) a. Bahnchef Hartmut Mehdorn insistiert [**darauf**], dass man Netz und Betrieb nicht trennen kann.
Railway chef Hartmut Mehdorn insists ProPP that one network and service not separate can DWDS Zeit 2001
- b. Niemand strengt sich (**dafür**) an, dass es ihm hinterher schlechter geht.
no one tries REFL ProPP that he afterwards worse feels DWDS Zeit 2004

• obligatory ProPP

- 8) a. Jetzt büßen die USA **dafür**, dass sie Militärdiktaturen gestützt haben.
Now pay the US ProPP that they military dictatorships supported have DWDS BZ 2000
- b. Gegenwärtig arbeiten wir **daran**, daß für jeden Ort, ... ein Beauftragter ... gewonnen wird.
Now work we ProPP that for every place ... a representative found will be DWDS K-Ge 1983

2. Correlates and predicate meaning

objective predicates: <i>wissen</i> 'know', <i>hören</i> 'hear', <i>fragen</i> 'ask', ...	non-objective predicates	
	objectively based: <i>es/davon wissen</i> 'it/ProPP know', <i>es/davon hören</i> , 'hear' <i>danach fragen</i> 'ask', ...	non-objectively based: <i>(es) bedauern</i> 'regret', <i>darüber nachdenken</i> 'think', <i>(es/darauf) hoffen</i> 'hope', ...

❖ Objectively based non-objective predicates

Any well formed matrix-predicate *verb cor dass* will be called ***SI/NI/AI- objectively based*** if *verb dass* without the correlate is ***SI/NI/AI-*** objective, e.g. *es wissen dass/ob* 'know it that/whether' or *davon wissen dass* 'know about that'.

— Notice that objectively based predicates are non-objective.

▪ Es

☞ An **objective predicate** licenses an **es**-correlate iff it is SI-objective or it is the *ob*-form of a SI-objective dass-form .

- The SI-objective predicate becomes **factive** with the *es*-correlate provided it does not have a suppletive form – cf. *hören* 'hear' and *es hören* vs. *sagen* and *es sagen*
- Definition: A predicate *pred* is **factive** iff 'x (not) pred dass $\sigma \Rightarrow \sigma$ '.

☞ **bound external ob-form**

- $x \text{ verb es ob } \sigma \Leftrightarrow (x \text{ verb es ob } \sigma \vee x \text{ verb es ob } \neg\sigma)$ with the range of validity restricted to contingent σ 's
- 'x verb es ob σ ' is legitimate if the predicate-*dass* is SI-objective.

es hören ob 'hear' and *es wissen ob* 'know', but not *es bedenken ob* 'consider' which is not objective.

- 1) c. F hört es, ob M kommt.
F hears it whether M comes

■ ProPP

☞ An **objective predicate** licenses a **ProPP** or a suppletive form with a ProPP iff it is **SI-objective** and not its own *deductive closure*.

- The **deductive closure** $pred^{cl}$ of $pred$ is determined by the relation $val(pred^{cl}; \alpha, \mathbb{N}) = val(pred; \alpha, \mathbb{N}) \cup \{\sigma \mid \sigma \text{ follows from } val(pred; \alpha, \mathbb{N}) \text{ \& } \sigma \text{ is not tautological}\}$.
 - davon wissen dass* 'know' is the deductive closure of *wissen dass*,
 - darüber sprechen dass* 'talk', as suppletive, is the deductive closure of *sagen dass* 'tell'.
 - fühlen dass* 'feel' and *merken dass* 'notice' on the other hand coincide with their own deductive closures, respectively, and do not allow ProPPs.

☞ **Neutral ob-form of objectively based non-objective ProPP dass-predicate**

- A ProPP verb ob $\sigma \Leftrightarrow$ A ProPP verb dass ϕ where σ is some subformula of ϕ , e.g. if F hears ProPP that ϕ (M only comes if L will come) then F hears ProPP whether σ (M is coming)
- 'A ProPP verb ob σ ' is legitimate if the predicate is not inherently s_I , but only consistent with s_I .

davon hören ob 'hear about whether' and *darüber sprechen ob* 'talk about whether', but not *davon wissen ob* 'know about whether' – cf. (1d) on slide [9](#).

☞ **Non-exhaustive wh-form of objectively based non-objective predicate**

wh (A, es/ProPP, verb, σ) \Leftrightarrow A verb es/ProPP **dass/ob** μ , where μ is a contextually given answer to the question $wh_y \sigma(y)$

es/davon hören wh 'hear' and *es merken wh* 'notice', but not *davon wissen wh* 'know about whether' – cf. (2c) on slide [10](#).

- **Preliminary conclusion**

non-objective predicates		
objective predicates: external <i>ob</i> -form ✓ exhaustive wh-form ✓	objectively based: bound <i>ob</i> -form ✓, neutral <i>ob</i> -form ✓, non-exhaustive wh-form ✓	non-objectively based: internal <i>ob</i> -form ✓, non-exhaustive wh-form ?

❖ Non-objectively based non-objective predicates

The absolute, relative and combined consistency degrees reflect the correlates the particular matrix predicate license.

Es-correlates are licensed by predicates with an absolute or com-bined consistency degree

(es) bedauern dass 'regret' with $CD = \{f, v\}$,

(es/darüber) diskutieren dass 'discuss' with $CD = \{f, v, T\}$,

(es/daran) glauben dass 'believe' with $CD = \{c, f, CNT, CNS\}$ and

(es/darauf) hoffen dass 'hope' with $CD = \{CTR, f, v\}$.

ProPPs are licensed by predicates with a relative or com-bined consistency degree.

(darüber) traurig sein dass 'be sad' with $CD = \{CNT, CNS\}$ and predicates with a combined consistency degree.

➤ Impact of *es*

- The legitimate use of *es* either leaves the consistency degree of the predicate unchanged or reduces it to a proper subset:

$CD(\textit{bedauern dass}) = \{f, v\}$ and $CD(\textit{es bedauern dass}) = \{v\}$ 'regret'

$CD(\textit{bedenken dass}) = \{f, v, t\}$ and $CD(\textit{es bedenken dass}) = \{v, t\}$ 'consider'

$CD(\textit{vorziehen dass}) = \{f, t\}$ and $CD(\textit{es vorziehen dass}) = \{f\}$ 'prefer'

- Notice that *bedauern dass* 'regret' and *bedenken dass* 'consider' become semi-implicative in that the consistency level 'f' is dropped by the use of *es*.

$CD(\textit{erreichen dass}) = \{v\}$ and $CD(\textit{es erreichen dass}) = \{v\}$

- An absolute non-objective verb which is rendered semi-implicative only by the use of *es* becomes also **factive** – cf. slide [35](#).

es bedauern dass 'regret', *es bedenken dass* 'consider' are factive, but neither *es erreichen dass* 'manage' and *es beweisen dass* 'prove', which are semi-implicative without their *es*-correlate, nor *es annehmen dass* 'assume' and *es ausschliessen dass* 'exclude', which are not semi-implicative in the presence of their *es*, become factive by the use of *es*.

		absolute consistency levels in L (X)			absolute CDS	
<i>bedauern</i> 'regret'		c_x	f_x	v_x	t_x	{f, v}
<i>es bedauern</i>	factive	c_x	f_x	v_x	t_x	{v}
<i>bedenken</i> 'consider'		c_x	f_x	v_x	t_x	{f, v, t}
<i>es bedenken</i>	factive	c_x	f_x	v_x	t_x	{v, t}
<i>erreichen</i> 'manage'		c_x	f_x	v_x	t_x	{t}
<i>es erreichen</i>		c_x	f_x	v_x	t_x	{t}
<i>annehmen</i> 'assume'		c_x	f_x	v_x	t_x	{c, f, v}
<i>es annehmen</i>		c_x	f_x	v_x	t_x	{c, f}
<i>ausschließen</i> 'exclude'		c_x	f_x	v_x	t_x	{f, v}
<i>es ausschließen</i>		c_x	f_x	v_x	t_x	{f, v}
<i>vorziehen</i> 'exclude'		c_x	f_x	v_x	t_x	{f, v}
<i>es vorziehen</i> 'prefer'	antifactive	c_x	f_x	v_x	t_x	{f}

➤ Impact of ProPP

- The legitimate use of ProPP either leaves the consistency degree of the predicate unchanged or reduces it to a proper subset:
 $CD\{\text{denken dass}\} \text{'think'} = \{\text{CTG, CNS}\}$ and $CD\{\text{daran denken dass}\} = \{\text{CNS}\}$
- Predicates like *daran denken* 'think about' and *sich darüber freuen* 'be glad' where CD contains the consistency level CNS are called **cognitent** predicates.
- A predicate is **cognitive** if it entails that σ follows from $KN(x)$ even if the predicate is in the scope of negation.
- Any cognitent predicate is cognitive iff its ProPP is optional – cf. the cognitent *sich darüber freuen* 'be happy' where the ProPP is optional in contrast to *sich daran stören dass* 'be bothered by' where the ProPP is obligatory.
- Predicates with a combined consistency degree $CD = \Delta_{\text{abs}} \cup \Gamma_{\text{rel}}$, where Δ_{abs} consists of absolute consistency levels and Γ_{rel} of relative consistency levels, have the absolute consistency degree Δ_{abs} when exhibiting an *es*-correlate and the relative one Γ_{rel} when occurring with a ProPP – cf. *hoffen dass* 'hope' where $CD = \{\text{CTR, f, v}\}$ is restricted to $CD = \{\text{f, v}\}$ by the *es*-correlate and to $CD = \{\text{CTR}\}$ by the ProPP.

		Relative consistency levels in L (X)			relative CDS	
<i>sich freuen</i> 'enjoy'	cognitive	CTR	CNT	CNS	T	{CNT, CNS}
<i>sich darüber freuen</i> 'be happy'		CTR	CNT	CNS	T	{CNS}
<i>sich darauf freuen</i> 'look forward'		CTR	CNT	CNS	T	{CNT}
<i>bitten</i> 'ask'		CTR	CNT	CNS	T	{CTR, CNT}
<i>darum bitten</i>		CTR	CNT	CNS	T	{CTR}
<i>drängen</i> 'urge'		CTR	CNT	CNS	T	{CTR, CNT}
<i>dazu drängen</i>		CTR	CNT	CNS	T	{CTR}
<i>denken</i> 'think'		CTR	CNT	CNS	T	{CNT, CNS}
<i>daran denken</i>	cognitive	CTR	CNT	CNS	T	{CNS}
<i>drohen</i> 'threaten'		CTR	CNT	CNS	T	{CTR, CNT, CNS}
<i>damit drohen</i>		CTR	CNT	CNS	T	{CTR}

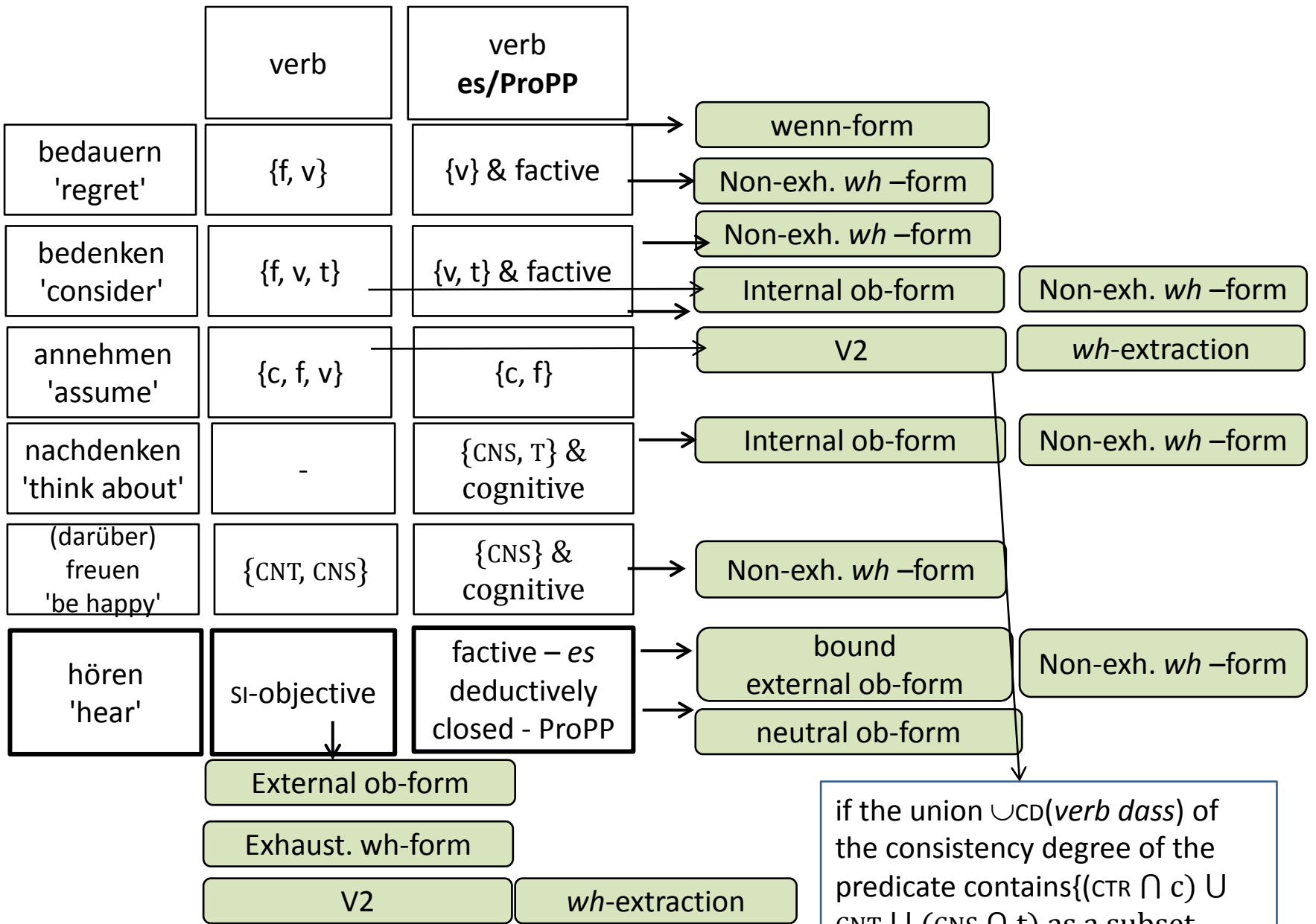
☞ **Non-exhaustive wh-form of non-objectively based non-objective predicate**

- $wh (A, es/ProPP, verb, \sigma) \Leftrightarrow A \text{ verb } es/ProPP \text{ **dass/ob** } \mu$, where μ is a contextually given answer to the question $wh_y \sigma(y)$,
- 'wh (A, es/ProPP, verb, σ)' is legitimate
 - if the predicate *verb es/ProPP* allows an internal or bound external *ob*-form
darüber nachdenken wh 'think', *es kontrollieren wh* 'check' or
 - If the predicate *verb es/ProPP* is factive or cognitive, respectively *es bedauern wh* 'regret' and *sich darüber freuen wh* 'be glad', but not *es beweisen dass* 'prove', which is not factive and does not allow an *ob*-form, and *es darauf hoffen dass* or *darauf hoffen dass* 'hope', which are neither factive nor cognitive.

- 2) b. F bedauert es, wer kommt.
F regrets it who comes
- c. F bedenkt es, wer kommt.
F considers it who is comes
- c'. F denkt darüber nach, wer kommt
F thinks ProPp who comes

❖ Conclusion

SI/NI-objective predicates: external <i>ob</i> -form ✓ exhaustive <i>wh</i> -form ✓ (KN-consistent)	non-objective predicates	
	objectively based: bound external <i>ob</i> -form ✓, neutral <i>ob</i> -form ✓, non-exhaustive <i>wh</i> -form ✓	non-objectively based: internal <i>ob</i> -form ✓, non-exhaustive <i>wh</i> -form ✓



if the union $\cup_{CD}(\text{verb dass})$ of the consistency degree of the predicate contains $\{(CTR \cap c) \cup CNT \cup (CNS \cap t)$ as a subset

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