

On the semantic influence of correlates

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Many proposition embedding predicates in German may exhibit optional *es-* or *da-*correlates. The latter modify their meaning to a certain extent, e.g. *Frank glaubt, dass Maria kommt* (*Frank believes that Maria is coming*) or *Frank freut sich, dass Maria kommt* (*Frank is glad about that Maria is coming*) can be valid without Maria's coming in contrast to *Frank glaubt es, dass Maria kommt* or *Frank freut sich darüber, dass Maria kommt* – cf. Sudhoff (2003) who shares the view that *es* can induce factivity. Similar observations can be made with respect to the admissibility of the *wh*-form. Thus, *Frank bedauert, wer kommt* (*Frank regrets who is coming*) is hardly admissible in contrast to *Frank bedauert es, wer kommt*. *Frank hört, wer kommt* (*Frank hears who is coming*) and *Frank hört es/davon, wer kommt*, on the other hand, are well-formed. However, they differ semantically. The talk will address the following questions:

1. What semantic conditions are characteristic for predicates allowing *es-* or *da-*correlates?
2. What meaning modifications are entailed by the use of the correlates?
3. What predicates admit *wh*-forms with correlates?
4. What is the meaning of a *wh*-form containing a correlate?

To answer these questions, we distinguish between *objective* and *non-objective* predicates. They are defined purely semantically by means of *semi-implicativity* [$X \text{ predicate dass } \sigma \rightarrow \sigma$], *negation-invariance* [$X \text{ predicate dass } \sigma \leftrightarrow X \text{ pred dass } \neg \sigma$] and the *Witness Existence Condition (WEC)* [$\forall \sigma \exists X (X \text{ pred dass } \sigma \vee X \text{ pred dass } \neg \sigma)$]. Neglecting the details, it should be mentioned, that *wissen dass* (*know*) and *zweifeln dass* (*doubt*) are *objective*. The reason for this is that *wissen* is *semi-implicative* and compatible with *WEC* and *zweifeln dass* is *negation-invariant* and compatible with *WEC*. It turns out that objective predicates which are compatible with *wissen ob* coincide with just those predicates which admit a *wh*-form *without* a correlate. (*Zweifeln dass/ob* and *aufpassen ob* (*keep an eye on*) are incompatible with *wissen ob*)

As to 1-4, we start with **objective predicates** and correlates:

- 1.1. *Es*-correlates are admitted by just those objective predicates which have a non negation-invariant *dass*-form. E.g. *wissen, hören* but not *zweifeln, aufpassen, fragen*.
- 1.2. *Da*-correlates are licensed by just those objective *dass*-predicates which are not *deductively closed*. For a predicate to be deductively closed means that for *each* x the set of statements $\{\sigma | x \text{ predicate dass } \sigma\}$ is deductively closed in the obvious sense – e.g. *merken dass* (*feel*). *Deductively open* (= *not closed*) predicates are *wissen dass, hören dass* or *zweifeln dass*. As to *ob*-predicates like *fragen* (*ask*) or *zweifeln dass* (*doubt*), which are always deductively open, they allow *da*-correlates.
- 2.1. The use of the *es*-correlate renders an objective *dass*-predicate *factive* in the sense that $[x \text{ pred es-cor not dass } \sigma] \rightarrow [\neg X \text{ pred dass } \sigma \wedge (\sigma \text{ is consistent } \rightarrow \sigma)]$ – cf. *hören* (*hear*).
- 2.2. The legitimate use of the *da*-correlate renders an objective *dass*-predicate *deductively closed* if without the *da*-correlate it is compatible with *semi-implicativity*. Otherwise nothing happens.
- 3.1. The *wh*-form with an *es*-correlate is well-formed just for all objective predicates admitting an *es*-correlate.
- 3.2. The *wh*-form with a *da*-correlate is well-formed for all objective predicates admitting an optional *da*-correlate, except negation-invariant *dass*-predicates – cf. *zweifeln* (*doubt*).
4. The meaning of a *wh*-form containing a correlate is *semantically underdetermined* in that it depends on a contextually given statement which cannot be read from the *wh*-form alone.

As to **non-objective predicates**, the talk will show that their axiom systems contain consistency properties concerning the embedded statements and determining the grammatical behaviour of correlates. For example, *bedauern dass* (regret) with the axiom 'x *bedauert dass* $\sigma \rightarrow \sigma$ is contingent' (**absolutely contingent**); *genießen* (enjoy) with 'x *genießt dass* $\sigma \rightarrow \sigma$ is consistent' (**absolutely consistent**); *erreichen* (manage) with 'x *erreicht dass* $\sigma \rightarrow \sigma$ is valid' (**semi-implicative**); *annehmen dass* (assume) with 'x *nimmt an dass* $\sigma \rightarrow \sigma$ is not tautological' (**absolutely intautological**). These so called *absolute consistency axioms* are partially ordered by implication '⇒', e.g. *semi-implicative* ⇒ *absolutely consistent* ⇐ *absolutely contingent* ⇒ *absolutely intautological*.

Additionally, there are axioms which are related to the subject's knowledge – the so called *relative consistency axioms*: e.g. *sich freuen dass* (be glad) with 'x *freut sich dass* $\sigma \rightarrow \sigma$ is consistent with what x knows' (**relatively consistent**); *sich daran stören dass* (be bothered by) with 'x *stört sich daran dass* $\sigma \rightarrow \sigma$ is entailed by what x knows' (**relatively cognitent**); *nachdenken* (think about) with 'x *denkt nach ob* $\sigma \rightarrow \sigma$ is contingent with what x knows' (**relatively contingent**); *aufpassen dass* (see to it) with 'x *passt auf dass* $\sigma \rightarrow \sigma$ is not entailed by what x knows' (**relatively incognitent**). The relative consistency axioms are also partially ordered, e.g. *relatively cognitent* ⇒ *relatively consistent* ⇐ *relatively contingent* ⇒ *relatively incognitent*.

There are also *combined consistency conditions*: e.g. *glauben dass* (believe) with 'x *glaubt dass* $\sigma \rightarrow (\sigma \text{ is valid} \vee \sigma \text{ is not entailed by what x knows})$ ' (**semi-implicative** ∨ **relatively incognitent**). The two disjunctive components of such conditions have to be logically independent.

The axiom system of each non-objective predicate consists either of an *absolute* or of a *relative* or of a *combined consistency condition*.

As to the questions 1-4 given above, this leads to the following answers:

- 1.1. A non-objective predicate licenses an optional *es*-correlate iff its axiom system contains an absolute or a combined consistency condition.
- 1.2. A non-objective predicate admits an optional *da*-correlate iff its axiom system contains a relative or a combined consistency condition.
- 2.1. The actual use of an *es*-correlate raises the *absolute consistency level* of predicates with an absolute consistency axiom in that i) absolutely contingent (*bedauern*) or absolutely consistent (*genießen*) predicates become semi-implicative and even *factive*, and ii) absolutely intautological predicates (*annehmen*) become absolutely contingent. In the case of a combined consistency axiom the *es*-correlate cancels the disjunctive component referring to what the subject knows.
- 2.2. Analogously, the actual use of an optional *da*-correlate raises the *relative consistency level* of the predicates with a relative consistency axiom in that i) relatively consistent predicates become relatively cognitent, even *cognitive* i.e. *A predicate da-cor not dass* σ yields additionally *σ follows from what A knows* if it is consistent with a knows and ii) relatively incognitent predicates become relatively contingent. In case of a combined consistency axiom, the *da*-correlate cancels the disjunctive component of the axiom which does not refer to what the subject knows.
3. A non-objective *dass/ob*-predicate has a well-formed *wh*-form iff the latter contains the appropriate correlate and i) the predicate is originally negation-invariant (*kontrollieren* (*check*)), ii) absolutely consistent (*genießen*), iii) absolutely contingent (*bedauern*), iv) relatively consistent (*sich freuen*) or, iv) if it is determined by a combined consistency axiom, the latter has either a semi-implicative or cognitent disjunct.
4. The meaning of the *wh*-form of a non-objective predicate with a correlate is semantically underspecified in that it cannot be determined by the *wh-form* alone but must be given by the context.

Reference

Sudhoff, S. (2003). *Argumentsätze und es-Korrelate*. Wissenschaftlicher Verlag: Berlin.