On the Semantics of German Declarative and Interrogative Root and Complement Clauses

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1. Introduction

Apart from their canonical use as complement clauses of certain matrix predicates, as in (1), German complement clauses can also occur independently, either as the second part of a question/answer pair, as in (2), or as solitaires, i.e. without any linguistic context, as in (3) to (6).

(1) *Hans weiß, dass Anna heute kommt.*
Hans knows that Anna today comes
'Hans knows (that) Anna is coming today.'

(2) Q: *Was glaubt Hans?*
'What does Hans believe?'

A: *Dass Maria kommt.*
'That Maria is coming.'

(3) Q: *Was fragt Hans?*
'What is Hans asking?'

A: Wer kommt.
'Who is coming.'

(4) *Dass die U-Bahn noch fährt!*
that the tube still runs
'Well I never, the tube is still running!'

(5) a. *Was er wohl macht?*
What he PART does
'I wonder what he is doing.'

b. *Was er dort macht!*
what he there does
'What on earth is he doing there?'

(6) *Ob es noch in Ordnung ist?*
whether it still in order is
'Is it still in order?'

As for the independent use of German complement clauses, as in (2) to (6), the question arises whether they are the semantic equivalent of corresponding root clauses. The following observations lead to the assumption that semantic equivalence does not obtain:

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i) As is shown in (7) and (8), adjacent and solitaire *dass*-V-final complement clauses alone cannot be analysed as assertion acts since alone they cannot create a new proposition.

(7) Q: *Was glaubt Hans?*
'What does Hans believe?'

A: *Dass Maria kommt.*
'That Maria is coming.'

C: *Dass Maria kommt?*
'That Maria is coming?'
(= Hans believes that Maria is coming?, ≠ Is Maria really coming?)

(8) A: *Hans studiert in Berlin.*
'Hans is studying in Berlin.'

B: *Er studiert dort Jura.*
'He is studying law there'

B': *# Dass er dort Jura studiert.*
that he there law studies

ii) The following examples demonstrate that *ob*- and *wh*-solitaires cannot be analysed as direct interrogative acts inasmuch as it is not necessary for the addressee to know the answer – cf. Truckenbrodt (2003).

(9) attorney: *#Ob Sie den Angeklagten kennen?*
Whether you the accused know

(9') attorney: *Kennen Sie den Angeklagten?*
'Do you know the accused?'

We will show that these observations can be explained by the different semantics of verb-final and root clauses. We suggest that the main difference is that declarative or interrogative root clauses create either propositions *p* or questions *Q* as wordly objects. They do this with the help of illocutionary force, which introduces illocutionary conditions determining that *p* or *Q* emerge as worldly objects upon uttering the sentence and that *p* and *Q* are related to the utterer as well as to the addressee. Complement clauses, however, provide the structure of state of affairs, on the one hand, or questions, on the other. These structures already exist as worldly objects which are denoted via the matrix predicate, i.e. they exist independently of uttering the sentence.

2. Syntax and semantics of declarative and interrogative root and embedded clauses

We have hypothesized that declarative and interrogative root clauses create a proposition or question and that V-final clauses are related to propositions or questions that exist independently. What notion of a proposition or question do we have? What does it mean that a proposition or question is created or that it exists independently? And do our semantic considerations match with syntax?

2.1. Declarative root clauses and dass-clauses

According to Barwise (1989:185), a state of affairs σ is a structure that classifies a situation s_σ. He defines 'classify' as the relation 'HoldsIn' (|=) – cf. (10i). It follows from his reasoning (p. 226) that a proposition itself classifies a situation, the propositional situation s_p, which involves the cognitive activity of an agent. (10ii) represents the relation between the proposition and the propositional situation s_p, again as a 'HoldsIn' relation.

(10) i. $s \models \sigma$

ii. $s_p \models (s \models \sigma)$

We further regard the ordinary meaning of a clause as a proposition, i.e. as a function from the set of situations into the set of true propositions.

(11) $\lambda s.\ s \models \sigma$

If there is a situation *s* that exemplifies the proposition as shown in (12), we obtain a 'true' proposition ($\exists s.\ s \models \sigma$) which characterizes the propositional situation s_p - cf. (13).

(12) $\langle s, \lambda s.\ s \models \sigma \rangle$

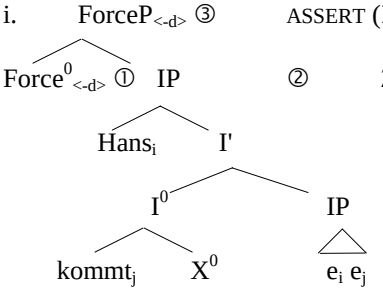
(13) $s_p \models (\exists s.\ s\ \sigma)$

As is shown below, propositional situations are necessary as linguistic objects, i) to distinguish propositional matrix predicates like *believe* and *know*, for example, from state of affairs predicates like *regret* and *want*, ii) to have a discourse referent for anaphoric expressions that refer to propositions, and iii) to explain why propositional predicates can 'embed' verb-second clauses, while state of affairs predicates and propositional predicates in the scope of negation cannot – cf. Schwabe (2006a). A propositional situation can be located in different modal contexts such as in doxastic, assertoric or buletic ones. It is expressed to be understood in relationship to the cognitive agent determined by the syntactic subject of the matrix clause.

A situation *s* can be introduced into the Common Ground by the semantics of a matrix predicate or by the illocutionary force of the sentence. Both main and embedded clauses have a functional category IP which is represented semantically as a proposition (14/15②) and both share a ForceP which determines that this proposition is either an argument of a matrix predicate variable or of the illocutionary operator ASSERT (14/15①). In German, ASSERT is syntactically indicated by verb second, which is determined by the syntactic independency feature <-d> in Force^0, and by the absence of the functional category CP. ASSERT is an interface operator operating between grammar and pragmatics. It maps the semantics of the IP, the proposition, onto a complex proposition which is the mental representation of an assertoric situation. The notation ASSERT subsumes various illocutionary conditions – cf. Schwabe (2006a, b).

(14) *Hans kommt.*
'Hans is coming.'

i. $\text{ForceP}_{<\text{-d}>}$ ③ ASSERT ($\exists s \langle s, \lambda s.\ s \models$ come (hans)$\rangle$)



① λp (ASSERT ($\exists s \langle s, p \rangle$))

As is shown in (14), ASSERT provides a situation which is mapped onto the 'true' proposition ($\exists s.\ s$ (come (hans))) – cf. Schwabe (2006a, b). The 'true' proposition ASSERT creates emerges at the very instant the V2 clause is uttered. Thus ASSERT creates a worldly entity that is a propositional situation s_p. The agent introduces s_p if he wants to update the addressee's and his own Common Knowledge. To update the Common Ground means adding a new s_p to preceding ones which are already parts of the Common Ground. Creating s_p introduces simultaneously a discourse referent that can be referred to anaphorically. In order to update the Common Ground, ASSERT determines 1) that the agent α utters a proposition, 2) that α believes s_p, 3) that α believes that the addressee β does not know s_p, and 4) that α wants β to believe s_p.

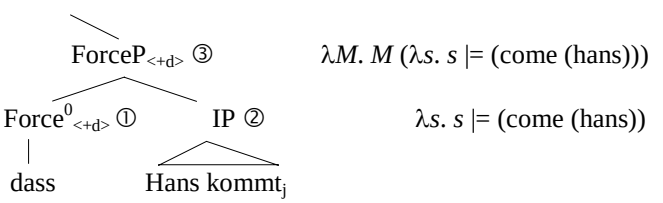
Both *dass*-clauses and declarative V2-clauses have in common that their IP is interpreted as a proposition. As for *dass*-clauses, their ForceP is syntactically marked by a feature which indicates the

dependency of the clause on a matrix predicate. The latter, in its turn, determines that there is a situation *s* which is a subset of the set of situations denoted by the *dass*-clause proposition and also what type of situation it is.

As to matrix predicates that embed *dass*-clauses, we distinguish between matrix predicates that have propositional arguments and those that have situational arguments. Predicates of the former group are, for instance, *glauben* (*believe*) *wissen* (*know*), and *hoffen* (*hope*). Predicates of the latter group are, for instance, *bedauern* (*regret*), *wollen* (*want*), and (*zeigen*) *indicate*. If the HoldsIn-relation is not under debate, as can be the case with respect to the latter group, it is presupposed that the particular state of affairs holds in the current or anticipated situation. As we shall see below, *dass*-clauses always have the same semantic representation, independent of whether they are embedded by propositional or situational predicates.

(15) is an example of a *dass*-clause embedded by a situational matrix predicate. ForceP is marked by the feature <+d> which indicates the dependency of the clause on a matrix predicate. For this reason, the semantics of the feature <+d> (15①) introduces a variable for a matrix predicate – cf. Asher (1993).

(15) *Anna bedauert, dass Hans kommt.*
'Anna regrets that Hans is coming.'



① $\lambda p\, \lambda M.\, M\, (p)$

The matrix predicate in its turn determines that there is a situation *s* which exemplifies the *dass*-clause proposition and that this situation is related to the matrix subject. The utterance context additionally determines that the situation is given in the actual context.

④ V^0_{matrix}: $\lambda p\, \lambda x\, \lambda s'\, \exists s \in \{s \mid s \mid= \langle s, p\rangle\}\ (s' \mid= (\text{regret}\ (x), (s)))$

⑤ IP_{matrix}: $\lambda s'\, \exists s \in \{s \mid s \mid= \langle s, \lambda s.\, s \mid= (\text{come}\ (\text{hans}))\rangle\}\ (s' \mid= (\text{regret}\ (\text{anna}), (s)))$

Since the context determines that the state of affairs which the V-final clause characterizes is presupposed, the truth of the *dass*-clause is not in dispute. Therefore the proposition need not be related to a cognitive agent. As in root clause (14) above, root clause (15) indicates ASSERT which turns the proposition ⑤ into a complex assertoric propositional representation.

To return to the question of whether independently used *dass*-clauses can be used as assertions: they cannot. Since the feature <+d> in the *dass*-clause indicates dependency, ASSERT cannot be attached to the semantics of its IP. Nor can ASSERT be attached to the semantics of its ForceP. The reason for this is that this attachment would result in a type clash.

As noted above, propositional matrix predicates like *believe* and *hope* denote a proposition. The syntactic and semantic representations of their *dass*-clauses do not differ from the representations of *dass*-clauses in constructions with situational matrix predicates like *regret* – cf. (15③) and (16③).

(16) *Anna glaubt, dass Hans kommt.*
'Anna believes (that) Hans is coming.'

① Force^0: $\lambda p\, \lambda M\, .\, M\, (p)$

② IP: $\lambda s.\, s \mid= (\text{come}\ (\text{hans}))$

③ ForceP: $\lambda M.\, M\, (\lambda s.\, s \mid= (\text{come}\ (\text{hans})))$

④ V^0_{matrix}: $\lambda p\, \lambda x\, \lambda s'\, \exists s_p \in \{s_p \mid= \exists s\, \langle s, p\rangle\}\ (s' \mid= (\text{believe}\ (x), (s_p)))$

⑤ IP_{matrix}: $\lambda s'\, \exists s_p \in \{s_p \mid= \exists s\, \langle s, \lambda s.\, s \mid= (\text{come}, (\text{hans}))\rangle\}\ (s' \mid= (\text{believe}\ (\text{anna}), (s_p)))$

Each of the two *dass*-clauses in (15) and (16) describes a situation which is selected by the semantics of the matrix predicate. Whereas the situation variable *s* provided by the propositional matrix predicate as in (16④) is part of a proposition which is affected by the matrix predicate, the situation variable *s* provided by a situational predicate like *regret* in (15④) is part of a proposition which is not affected by the matrix predicate.

Obviously, the theory outlined above may give rise to various objections and questions: i) Why do we not adopt the claim made by Brandt et al. (1992) that root declaratives and *dass*-clauses have a uniform semantics? ii) Why do we not accept their view that *dass*-clauses and root clauses are represented semantically as 'true' propositions? And iii), is it compelling to assume that propositions are necessary as linguistic objects?

To i): Brandt et al. (1992) and Zimmermann (1993) argue that declarative root clauses and *dass*-clauses differ with respect to their syntactic structure, but also that both have a uniform semantic representation as given in (17ii).

(17) i. a. *Peter schläft.*
'Peter is sleeping.'

b. ..., *dass Peter schläft.*
'... (that) Peter is sleeping.'

ii. ∃e [e INST (sleep (peter))]

The first objection which can be raised against this claim is that the semantic representation should mirror the syntactic dependency of *dass*-clauses. So we would expect that, analogously to our proposal, they should be the argument of a matrix predicate variable.

iii. V2-clause: $\exists e.\ e \models$ (sleep (peter))
dass-clause: $\lambda M.\ M$ ($\exists e.\ e$ INST (sleep (peter))

A second, more serious objection, is related to the use of *dass*-clauses as solitaires. If they had a representation as in (17ii), nothing would prevent them from being the argument of ASSERT. We consider that our non-uniform semantic analysis does account for the restricted illocutionary potential of solitaire *dass*-clauses. As shown above, declarative root clauses syntactically indicate assertoric illocutionary force via their non-dependency feature while independently used verb final clauses do not indicate the illocutionary force by their syntactic structure. As will be shown below, their force results from the linguistic context if they are used as answers or from their propositional content and the situative context if they are used as solitaires.

To ii): We have shown that declarative root clauses are represented semantically as a proposition that is the argument of ASSERT. If the clause is uttered, the agent selects a situation that exemplifies the proposition and thus creates a propositional situation. Analysing ASSERT as a function from the set of propositions into a set of 'true' propositions takes into account Rehbock's (1992) idea that the agent establishes the reference of the sentence. And it makes semantically clear the difference between root declaratives and *dass*-clauses. Whereas the former establish propositional objects, the latter presuppose them.

It seems obvious that *dass*-clauses could also be interpreted as 'true' propositions. And indeed, Steube (1987), Rosengren (1992), and Zimmermann (1993) seem to make this proposal. So why not represent *dass*-clauses like they do – cf. (17ii)? The *first* argument against this approach is as follows. As we know, matrix predicates may have either propositional or situational arguments – cf. (15/16ii). However, an analysis of *dass*-clauses as 'true' propositions makes it impossible to represent this difference. Consider the structure in (18). The representation (18i) obtains if the *dass*-clause with the semantics as given in (17) specifies the propositional variable of the matrix predicate. (18ii) is the representation we have argued for in (16)

(18) i. believe (anna), ($\exists s\ \langle s, \varphi \rangle$)

ii. $\exists s_p \in \{s_p \models \exists s\ \langle s, \lambda s.\ s \models$ (come, (hans))$\rangle\}$ (believe (anna), (s_p))

The representation in (19i), however, shows that the *dass*-clause cannot be a 'true' proposition. The subject cannot regret a propositon but can regret the situation which exemplifies the proposition. Therefore, the situation *s* is the argument of the matrix predicate as represented in (19ii). The latter representation is only possible if we regard a *dass*-clause as a set of situations and not as a 'true' propositon.

(19) i. *regret (anna), ($\exists s \langle s, \varphi \rangle$))

ii. $\lambda s' \exists s \in \{s \mid s \models \langle s, \lambda s.\ s \models (\text{come (hans)}) \rangle\}$ ($s' \models$ (regret (anna), (s)))

Another argument against the representation of *dass*-clauses as 'true' propositions is related to the semantics of propositional predicates like *know* which can embed declaratives (20a) and interrogatives (20b). Such verbs have, like all propositional predicates, a propositional argument s_p. If they embed an interrogative, the proposition consists of a question/answer-pair (20b).

(20) a. $\exists s_p \in \{s_p \mid s_p \models (\exists s.\ \langle s, \varphi \rangle)\}$ (verb (x), (s_p))

b. $\forall s_p \in \{s_p \mid s_p \models (\exists s.\ \langle s, \langle a, \Phi \rangle \rangle)\}$ (verb (x), (s_p))

To iii): as noted above, a propositional situation variable s_p is necessary first to distinguish propositional matrix predicates like *believe* and *know*, for instance, from situational predicates like *regret*. Secondly, the propositional situation variable is necessary to serve as a discourse referent for anaphoric expressions.

(21) *Anna glaubte, dass Hans kommt, und bestätigte es (später).*
'Anna believed (that) Hans was coming and confirmed it (later).'

Third, as Schwabe (2006a) shows, we need the propositional situation variable to explain why non-factual propositional predicates can 'embed' German verb-second clauses while factual predicates and negated propositional predicates cannot.[1]

(22) a. *Anna glaubt, Hans kommt.*
Anna believes Hans comes
'Anna believes Hans is coming.'

b. **Anna glaubt nicht, Hans kommt.*
Anna believes not Hans comes

c. **Anna bedauert, Hans kommt.*
Anna regrets Hans comes

d. **Anna möchte, Hans kommt.*
Anna would like Hans comes

The approach outlined in Schwabe (2006a) accounts for the observation that *dass*-solitaires select precisely those predicates which, if expressed linguistically, do not permit German root declaratives to be embedded.

2.2. Interrogative root and embedded clauses

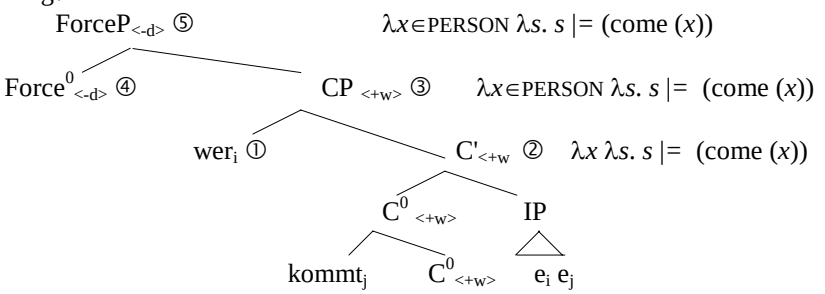
Similarly for open interrogative root clauses and open interrogative V-final clauses.[2] Both have in common that their CP is semantically represented as an interrogative function (*Q*)– cf. Krifka (2001). Unlike a proposition which is a function from a set of situations into sets of 'true' propositions, an open question is a function from sets of answer terms into sets of propositions. If *Q* is mapped onto an *answer* (*a*), a *question*/*answer* pair ($\langle$Q, *a*$\rangle$) results.

As for interrogative root clauses like (23), their ForceP locates the feature <-d> which indicates interrogative force. It cannot be assertoric illocutionary force since ASSERT requires an argument that is a

[1] See Gärtner (2002) and Meinunger (2004) on embedded declarative root clauses.
[2] As for the analysis of closed interrogatives cf. Schwabe (2006b).

proposition – cf. (14②). Since the CP of an interrogative clause is *Q*, the <-d>-feature is interpreted as the interrogative functor QUEST that takes *Q* and implements it into a complex illocutionary proposition representing an question act – cf. Schwabe (2006b).

(23) *Wer kommt?*
Who is coming?



① $\lambda F\ \lambda x{\in}\text{PERSON}\ \lambda s.\ \langle s, F(x)\rangle$

④ $\lambda Q\ \forall a\ (\text{QUEST}\ ((\exists s\ \langle s, \langle Q, a\rangle\rangle) \vee \neg(\exists s\ \langle s, \langle Q, a\rangle\rangle)))$

⑤ $\forall a\ (\text{QUEST}\ ((\exists s\ \langle s, \langle \text{Q}, a\rangle\rangle) \vee \neg(\exists s\ \langle s, \langle \text{Q}, a\rangle\rangle)))$

$\text{Q} = \lambda x{\in}\text{PERSON}\ \lambda s.\ s \models (\text{come}\ (x))$

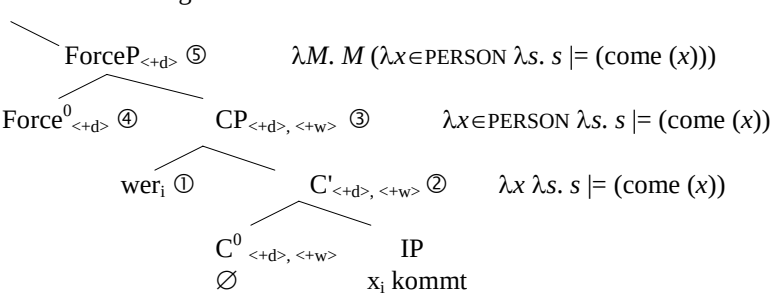
According to Krifka (2001), a question *Q* is a function from answers to answer propositions. As is shown in Schwabe (2006b), QUEST determines various illocutionary conditions: 1) the agent α utters an expression which is a question *Q*, 2) α wants to know the set of 'true' answer propositions Ω, and 3) α wants β to cause an assertoric situation containing the the utterance of Ω.

(24) $\Omega \quad = \quad \{s_p |\ s_p \models (\exists s\ \langle s, \langle \lambda x{\in}\text{PERSON}\ \lambda s.\ s \models (\text{come}\ (x)), a\rangle\rangle)\}$

To summarize: a propositional situation s_p emerges as a worldly particular if the agent utters a declarative root clause (cf. 14). A question situation s_q emerges as a worldly particular upon uttering an interrogative root clause.

V-final interrogative clauses indicate that the question their CP expresses is part of a question/answer pair that is presupposed by a matrix predicate.

(25) *Anna fragt, wer kommt.*
'Anna asks who is coming'.



① $\lambda F\ \lambda x{\in}\text{PERSON}.\ \lambda s.\ \langle s, F(x)\rangle$

④ $\lambda Q\ \lambda M.\ M\ (Q)$

A proposition with an interrogative matrix predicate like *fragen* (*ask*) denotes a situation in which the question given by the CP of the interrogative verb-final clause is uttered – cf. ⑥.

⑥ $\text{V}^0_{\text{matrix}}$: $\lambda Q\ \lambda y\ \lambda x\ \lambda s'\ ((s' \models (\text{utter}\ (x), (Q))) \wedge \exists s_{assert} \in \{s_{assert} \mid s_{assert} \models \forall s_p \in \Omega\ (\text{assert}\ (\text{y}), (s_p))\}\ (\text{want}\ (x), (s_{assert})))$

$\text{ForceP}_{\text{matrix}}$: $\text{ASSERT}\ (\exists s'\ ((s' \models (\text{utter}\ (\text{anna}), (Q))) \wedge \exists s_{assert} \in \{s_{assert} \mid s_{assert} \models \forall s_p \in \Omega\ \exists y\ (\text{assert}\ (\text{y}), (s_p))\}\ (\text{want}\ (\text{anna}), (s_{assert}))$

$\Omega = \{s_p \mid s_p \models (\exists s \langle s, \langle Q, a\rangle\rangle)\}$

$Q = (\lambda x \in \text{PERSON}\ \lambda s\ (s \models (\text{come}\ (x)))$

The complex proposition ⑥ denotes the question situation s' which exists independently upon the utterance of (25). Unlike question situations that are introduced by QUEST and thus related to the addressee by default, denoted question situations are not necessarily related to the addressee. This helps, as is shown below, to explain the particular effects of questions like (5), (6), and (9).

With respect to predicates like *wissen* (*know*) or *bedauern* (*regret*), which embed declarative as well as interrogative clauses, we suggest that in both cases they presuppose a proposition which is either non-structured as in (15) or structured such that it consists of a question/answer pair as in (26). If the proposition is structured by a question/answer pair and only the question is expressed, the answer is represented by variable *a*.

(26) a. *Anna weiß, wer kommt.*
'Anna knows who will come'.

⑤ ForceP: $\lambda M.\ M\ (\lambda x \in \text{PERSON}\ \lambda s.\ s \models (\text{come}\ (x)))$

⑥ V^0_{matr}: $\lambda Q\ \lambda x\ \forall s_p \in \{s_p \mid s_p \models (\exists s \langle s, \langle Q, a\rangle\rangle)\}\ \forall s_p' \in \{s_p' \mid s_p' \models (\neg\ \exists s \langle s, \langle Q, a\rangle\rangle)\}$ ((know (s_p), (x)) $\vee$ (know (s_p'), (x))

ForceP_{matr}: $\forall s_p \in \{s_p \mid s_p \models (\exists s \langle s, \langle Q, a\rangle\rangle)\}\ \forall s_p' \in \{s_p' \mid s_p' \models (\neg\ \exists s \langle s, \langle Q, a\rangle\rangle)\}$ ASSERT ((know (s_p), (anna)) $\vee$ (know (s_p'), (anna))

$Q = (\lambda x \in \text{PERSON}\ \lambda s\ (s \models (\text{come}\ (x)))$

b. *Anna bedauert, wer gekommen ist.*
'Anna regrets who has come'.

ForceP_{matr}: $\exists s \in \{s \mid \exists a \langle s, \langle Q, a\rangle\rangle\}$ ASSERT $(s' \models (\text{regret}\ (\text{anna}), (s)))$

$Q = (\lambda x \in \text{PERSON}\ \lambda s\ (s \models (\text{come}\ (x)))$

To summarize: declarative root and V-final clauses each express propositions and interrogative root and V-final clauses each express questions.[3] The utterance of a root declarative creates an assertoric situation and thus a propositional situation s_p, on the one hand, and the utterance of an interrogative root clause creates a question situation, on the other. The situations are created as worldly objects with the help of the illocutionary functors ASSERT and QUEST which introduce specific illocutionary conditions. A German V-final clause, however, neither expresses ASSERT not QUEST. It denotes a function from the meaning of matrix predicates into the meaning of matrix VPs. If this function is applied to a matrix predicate, the meaning of the V-final clause is related to propositions which exist independently upon the utterance.

Since, as shown in detail below, independently used declarative and interrogative verb-final clauses are related to contextually given matrix predicates, they cannot be arguments of ASSERT or QUEST. They can neither introduce assertoric nor question situations and thus cannot be used as assertions or direct question acts.

[3] See Huddleston and Pullum (2002) who claim the same for English dependent and independent declarative and interrogative clauses.

3. Implications for independently used verb-final clauses

3.1. Syntax and semantics of independently used verb-final clauses

It is obvious that independently used declarative V-final clauses characterize a situation but do not denote it and that interrogative solitaires characterize partially a situation and denote it neither. But why do we interpret them to mean that such situations exist and what enables us to locate these situations in a particular world? Can we do this because there is in fact a silent syntactic structure that contributes to this interpretation? Or is there rather an algorithm at the interface between Grammar and interpretation, as Stainton (2004) suggests for NP and PP fragments, that reconstructs propositions?

Unlike Reis (1985), Oppenrieder (1989), Doherty (1979), and Truckenbrodt (2003) but expanding on Schwabe (1994), Wilder (1994) and Merchant (2001, 2004), Schwabe (2006a) argues that independently used verb-final clauses, too, must be analysed as elliptical structures. The main arguments are as follows: i) Independently used verb-final clauses are constituents like independently used DPs. A minimum of syntactic structure is needed to explain the case of the DPs in (27) or the polarity item in (28).

(27) a. *(Enan) kafe (parakalo)!*
a coffee.ACC please
'A coffee please!'
b. *Vodu požal'sta!*
water.ACC please

(28) Any problems?

II) Since adverbials (29), particles (30), and left dislocated phrases (31) can precede independently used verb-final clauses, they need a structural position.

(29) a. Q: *Was glaubt Anna?*
What does Anna believe
b. A: *Hoffentlich, dass Hans kommt.*
'Hopefully that Hans is coming.'

(30) a. *Nicht, dass er jetzt an die Ostsee fährt!*
Not that he now to the Baltic drives
'Not that he drives to the Baltic now!'
b. *Nicht, dass er schön singt!*
Not that he well sings
'Not that he sings well!'

(31) i. *Einen Porsche zu kaufen, dass jeder das anstrebt!*
a Porsche to buy that everyone this wants
'That everybody wants to buy a Porsche!'
ii. [einen Porsche zu kaufen]$_i$ ... [$_{VP}$ [dass jeder das$_i$ erstrebt] [$_V{}^0$ e]]

Schwabe shows that these independently used complement clauses have a syntactically silent matrix predicate. But unlike Merchant who assumes that the silent material is syntactically and semantically complete but without phonological structure, Schwabe demonstrates that matrix clauses have a minimalist syntactic structure that contains empty categories. An independently used verb-final clause thus has the syntactic structure as in (32) irrespective of whether it is an answer complement clause as in (2) or a solitaire as in (4)-(6). The functional categories YP and XP provide an opportunity for checking the dependency and focus features.

When structures like (32) are mapped onto their semantic form, it is obvious that the semantic form of their syntactically empty V^0 is not provided by the verb-final clause itself. The semantic form of the silent matrix predicate of a complement answer (32ⓒ) is provided linguistically, by the preceding question act. The semantic form of the silent matrix predicate of a solitaire, however, is not provided linguistically (32ⓒ'). As will be shown below, it is derived by the situative context.

(32) a. [Q: *Wass fragt Anna?*
'What does Anna ask?']

$[\ \lambda Q\ \lambda s'\ \exists y\ ((s' \models (\text{utter (anna)}, (Q))) \wedge \forall s_p \in \{s_p \mid s_p \models (\exists s\ \langle s, \langle Q, a\rangle\rangle)\}\ \exists s_{assert} \in \{s_{assert} \mid s_{assert} \models (\text{assert (y)}, (s_p))\}\ (\text{want (anna)}, (s_{assert}))\ ]$

A: *Wer kommt.*
'Who is coming.'

b. *Wer kommt.*
'Who is coming.'

i. VP_{matrix} ⑦/⑦'

V^0 ⑥/⑥' $\quad ForceP_{<+d>}$ ⑤ $\quad \lambda M.\ M\ (\lambda x \in \text{PERSON}\ \lambda s.\ s \Vdash (\text{come}\ (x)))$

ii. *wh-complement answer*

⑥ $\lambda Q\ \lambda s'\ \exists y\ ((s' \models (\text{utter (anna)}, (Q))) \wedge \forall s_p \in \{s_p \mid s_p \models (\exists s\ \langle s, \langle Q, a\rangle\rangle)\}\ \exists s_{assert} \in \{s_{assert} \mid s_{assert} \models (\text{assert (y)}, (s_p))\}\ (\text{want (anna)}, (s_{assert}))$

⑦ $\text{ASSERT}\ (\exists s'\ ((s' \models (\text{utter (anna)}, (Q))) \wedge \forall s_p \in \{s_p \mid s_p \models (\exists s\ \langle s, \langle Q, a\rangle\rangle)\}\ \exists s_{assert} \in \{s_{assert} \mid s_{assert} \models (\exists y\ (\text{assert (y)}, (s_p)))\}\ (\text{want (anna)}, (s_{assert})))$

$Q = (\ \lambda x \in \text{PERSON}\ \lambda s\ (s \models (\text{come}\ (x)))$

As for complement clauses that are term answers (32aA) to given questions, we obtain the semantic form of the syntactically silent matrix predicate ⑥ by copying the linguistically given question. The semantic form ⑦ results from applying ⑤ to ⑥ and the attachment of ASSERT. The latter is not determined by the syntactic form of the interrogative, but by the illocutionary conditions of the preceding question. A solitaire like (32b) differs from an answer complement clause like (32aA) in that there is no linguistic context that could provide a copy for the empty matrix predicate and the illocutionary operator. Therefore, the semantic interpretation of the empty verbal element ⑥' contains an existentially bound matrix predicate variable which, as is shown below, is specified by a predicate derived from the situative context. With this variable, the semantic structure (32⑦') of the solitaire is underspecified.

iii. *wh-solitaire*

⑥' $\lambda Q \in \text{QUESTION}\ \exists M.\ M\ (Q)$

⑦' $\exists M.\ M\ (\lambda x \in \text{PERSON}\ \lambda s.\ s \models (\text{come}\ (x)))$

Whereas the semantic content of the syntactically empty V^0 of a *dass*-complement answer like *Dass Hans kommt* (*that Hans is coming*) is again copied from the preceding question (*What does Anna believe?*), the syntactically empty V^0 of a corresponding *dass*-solitaires is again represented as an existentially bound matrix predicate variable which is specified by the situative context – cf. (33).

(33) ii. *dass-complement answer*

⑥ $\lambda p\ \lambda s'\ \exists s_p \in \{s_p \models \langle s, p\rangle\}\ (s' \models (\text{believe (anna)}, (s_p)))$

⑦ $\text{ASSERT}\ (\exists s'\ \exists s_p \in \{s_p \models \langle s, \lambda s.\ s \Vdash (\text{come}\ (x))\rangle\}\ (s' \models (\text{believe (anna)}, (s_p))))$

iii. *dass-solitaire*

⑥' $\lambda P\ \exists M.\ M\ (P)$

⑦' $\exists M.\ M\ (\lambda s.\ s \models (\text{come (hans)}))$

3.2 Interpretation of solitaires

As far as answer complement clauses were concerned, we derived the semantic content of the matrix predicate by the linguistically given question. By its illocutionary functor, the latter determines that the complement answer is an assertion. The appropriate predicates for solitaires are derived from the situative context. As to bare *dass*-solitaires like (34a), it seems obvious that it is an EMOTIVE predicate, so that the expression can be interpreted as an exclamative. But comparing the propositional contents of (34a) and (34b), it is clear that (34b) can hardly be used as an exclamative.

(34) a. *Dass Hans kommt!*
that Hans comes
'So Hans is coming!'

b. *Dass Du mir jetzt an die Ostsee fährst!*
That you PRO1.SG.DAT now to the Baltic drive
'So drive to the Baltic now!'

Assuming a context where the predicate inserted for *M* in (34a) is EMOTIVE and the one in (34b) is VOLITIONAL, the latter determined to a certain extent by the dative pronoun, both predicates have a situational argument *s*.

(35) $\exists s \in \{s \mid s \models (\text{come (hans)})\}$ (IS.AMAZED (α), (s))

(36) $\exists s \in \{s \mid s \models (\text{Baltic.drive } (\beta))\}$ (WANT (α), (s))

Note that, unlike with respect to linguistically given matrix predicates, the matrix predicates provided by the situational context are always related to situations that are facts or are wanted to be facts. This explains why *dass*-solitaires, unlike *dass*-clause answers, can neither update the Common Ground nor be denied. Since emotive predicates like BE AMAZED and volitional ones like WANT denote a situation which is given by the utterance context or by the subject's normative system, these situations are easy to access.

If the matrix fragment contains a negation particle, as in (37) and (38), this particle negates a VOLITIONAL predicate.

(37) *Nicht dass du gerade schön singst!*
Not that you exactly well sing
'You don't exactly sing well!'

$\exists s' \in \{s' \mid s' \models \exists s_p \in \{s_p \models \exists s\ (s \models (\text{is.well.singing } (\beta))\}$ (BELIEVE (β), (s_p)$\}$ $\neg$ (WANT (α), (s'))

(38) *Nicht dass du jetzt an die Ostsee fährst!*
Not that you now to the Baltic drive
'Don't drive to the Baltic now!'

$\exists s \in \{s \mid s \models (\text{Baltic.drive } (\beta))\} \neg$ (WANT (α), (s_1))

Unlike VOLITIONAL predicates, silent EMOTIVE predicates permit neither the negation in the matrix clause nor its floating into the complement clause. The reason for the latter seems to be that EMOTIVE predicates are presuppositional and exclude the reasoning about complementary propositions.

The matrix predicate variable of *wh*-solitaires like (39) and (40) can also be specified by either an EMOTIVE or by a VOLITIONAL predicate.

(39) *Wer dort kommt!*
who there comes

$\exists s \in \{s \mid \exists a \langle s, \langle Q, a \rangle\rangle\}$ (IS.AMAZED (α), (s))

$Q = (\lambda x \in \text{PERSON } \lambda s\ (s \models (\text{come } (x)))$

(40) *Wer wohl kommen wird?*
who PART will come

$\exists s' \in \{s' \mid= (\forall s_p \in \{s_p \mid\ s_p \mid= (\exists s \langle s, \langle Q, a \rangle\rangle)\}\ (\text{KNOW}\ (\alpha), (s_p)))\}\ \ (\text{WANT}\ (\alpha), (s'))$

$Q = (\ \lambda x \in \text{PERSON}\ \lambda s\ (s \mid= (\text{come}\ (x)))$

As for (40), it is reconstructed that α wants the situation that he knows the 'true' affirmative answer propositions to the expressed question *Q*. One can derive from this that α has not got the answer propositions yet. (40) can therefore be interpreted as an indirect question act, presupposed the conditions of a question act are given. Unlike with respect to root interrogatives, it is not explicit that the addressee of the derived question act is the hearer β. It is rather a deliberative question act since the addressee of the question act is α rather than β. If β had been the direct addressee, α would have chosen the canonical question form. The question act can be additionally determined by the particle *wohl*. Note that EMOTIVE predicates are restricted to *wh*-complement clauses only, i.e. they do not allow *ob*-complements. The reason for this is that these predicates are not objective.

4. Conclusion

All pragmatic interpretations of solitaires have in common that the specification of the matrix predicate variable is determined by the situative context. Therefore the agent is always the speaker and the situations that are characterized by the complement clause and the reconstructed matrix clause are always given by the current actual context or by the anticipated actual context. The reason for this is that these situations must be easily accessible for the addressee. Solitaires also have in common that their illocutionary force is not determined by linguistic means alone, as is the case with the corresponding root clauses. The illocutionary force results from the specification of the matrix predicate variable. It results either from VOLITIONAL or from EMOTIVE predicates. If the predicate is VOLITIONAL, an *erotetic* or *directive* speech act can be derived. If it is EMOTIVE, an *exclamative* speech act can be performed. Depending on whether the matrix clause is negated, a *dass*-solitaire with a VOLITIONAL predicate contributes to constituting to a *prohibitive* act. The latter can also be performed if the *dass*-solitaire contains negation.

Unlike an interrogative root clause which establishes a question situation that always involves the addressee of the root clause, an interrogative solitaire, which does not express illocutionary force, does not establish a question situation. It can, however, be related to a question situation that exists independently of the utterance situation of the solitaire. Since the question situation can be related to another addressee than the addressee of the solitaire, the latter is not necessarily the addressee of the question. This explains the effect which has been observed with regard to (9).

Similarily, the use of a declarative root clause establishes a propositional situation s_p which, depending on to the illocutionary function of the root clause, must be an update of the Common Ground, i.e. it must be related to preceding propositions. A declarative solitaire is related to a proposition that already exists independently of its uttering. The proposition can scarcely update the Common Ground as it is not directly related to the preceding proposition.

Answer complement clauses share with solitaires the property that they provide a matrix predicate variable. The specification of this variable is given by the semantics of the preceding question. It is thus linguisticallly determined, i.e. at the level of Grammar. But the illocutionary force of the complement clause is not determined syntactically. That it is an assertion is predicted by the illocutionary conditions provided by the preceding interrogative act.

Syntactically, solitaires and answer complement clauses have in common that they have an elliptical clause structure inasmuch as the matrix predicate is syntactically empty. But they differ in the semantic form of this empty predicate. Whereas the semantic form of the matrix verb of complement answers results from copying the preceding question, the semantic form of the matrix verb of solitaires is semantically indeterminate, i.e. it merely provides the existential binding of the matrix predicate variable, the latter being specified on the pragmatic level.

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